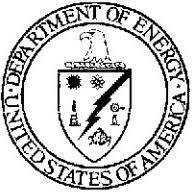


## EXHIBIT 11



**U.S. Department of Energy**  
**Office of River Protection**  
P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

APR 15 2009

09-ESQ-076

Mr. Mike Armstead, Contract Manager  
Washington River Protection Solutions LLC  
2440 Stevens Center Place  
Richland, Washington 99354

Dear Mr. Armstead:

**CONTRACT NO. DE-AC27-08RV14800 – RESULTS OF ASSESSMENT A-09-ESQ-TANKFARM-001, PHASE I, “INDUSTRIAL HYGIENE TECHNICAL BASIS”**

This letter transmits the results of the U.S. Department of Energy, Office of River Protection assessment of the Tank Operations Contractor “Industrial Hygiene Technical Basis.” The assessment was completed on February 23, 2009.

The assessment resulted in four findings. The assessment team concluded that there are deficiencies in the programmatic assessment of new technologies to enhance worker safety and health, the selection and use of Direct Reading Instruments for air monitoring, the incorporation of the goal of applying the concept of “As Low As Reasonably Achievable” (ALARA) to chemical vapor exposures, and the selection process for personal protective equipment.

It should be noted that the Washington River Protection Solutions LLC is being requested to demonstrate how the ALARA concept shall be incorporated into the safety culture with respect to the monitoring and control of chemical vapors, as it is being applied to ionizing radiation hazards.

Within 30 days of receipt of this letter you shall respond to the assessment findings. The response shall include:

- The corrective actions that have been taken (i.e., compensatory measures) to control or remove any adverse impact from the non-compliant condition until sustainable corrective actions are implemented;
- The corrective actions that will be taken to identify the extent of condition, correct the causes, and prevent further findings (i.e., Corrective Action Plan); and
- The date when all corrective actions will be completed verified and compliance to the applicable requirements achieved (i.e., completion of an effectiveness review).

APR 15 2009

Mr. Mike Armstead  
09-ESQ-076

-2-

If you have any questions, please contact me, or your staff may contact William J. Taylor,  
Assistant Manager, Office of Environmental Safety and Quality, (509) 376-7851.

Sincerely,

  
Joseph C. Poniatowski  
Contracting Officer

ESQ:RLU

Attachment

cc w/attach:  
WRPS Correspondence

Miller Decl., Ex. 11, p. 635  
PL-HC\_00000725

PL-HC\_00000725

Attachment  
09-ESQ-076  
A-09-ESQ-TANKFARM-001

**United States Department of Energy  
Office of River Protection  
Tank Operations Contractor  
Industrial Hygiene Technical Basis Assessment**

**Final Report  
A-09-ESQ-TANKFARM-001  
March 10, 2009**

**Richard L. Urie  
Team Leader**

## EXECUTIVE SUMMARY

The U.S. Department of Energy, Office of River Protection (ORP) conducted a Phase I assessment of the programmatic elements of the Washington River Protection Solutions LLC (WRPS) Industrial Hygiene (IH) program from January 16, 2009, through February 20, 2009. The assessment was directed at four elements of interest: past assessments, program technical basis and procedures; staff qualifications; and program management.

### **Conclusions**

There are many very strong elements to the IH technical basis, including a well qualified staff; an extensive sampling and Personal Protective Equipment (PPE) inventory; proper utilization of accredited laboratories; and a solid funding base. The programmatic element for control, conveyance, and management of sampling data appears to be exceptional. WRPS has established over 80 documents related to IH information and directives. However, there is a missing tier of direction, which normally serves as the bridge between the general instructive programs and implementation. Specifically, there is an absence of written methodologies that normally provide the basis for the selection of PPE and some Direct Reading Instruments, which is a fundamental programmatic necessity. There is also a lack of strategic sample planning and data management, which is reportedly being addressed through the support of an expert IH consultative panel. In addition, there is an absence of a dedicated program for the review or development of new technologies for the purpose of enhancing worker health and safety, as required under 10 Code of Federal Regulations (CFR) 851, "Worker Safety and Health Plan."

An overriding observation of the WRPS technical basis is the prevalence of references made to IH professional judgment. ORP acknowledges and encourages the application of professional judgment, with respect to interpretation of directives and real time response to changes in operational needs or off normal events. However, there is an absence of the basis for decision making that has been critically reviewed, documented, and unilaterally applied to the WRPS operations. In addition, there is a lack of documentation of individualized IH decisions, which results in a lack of on-going and post event accountability. Lastly, the WRPS IH goals and objectives neither stipulate, nor discuss the requirement to reduce chemical exposures to As Low As Reasonably Achievable (ALARA), below the Occupational Exposure Limits (OEL). The absence of this goal is reflected in a prevailing attitude through IH and Industrial Hygiene Technician Staff, that chemical vapor exposures are adequately characterized and controlled with respect to conventional standards. ORP shall closely examine the WRPS health and safety culture in the second phase of the assessment to ascertain the degree in which this is problematic in regards to the impacts to the management of off normal events, continued efforts for improvement, and the incorporation of health and performance based goals.

### **FINDINGS**

**A-09-ESQ-TANKFARM-001-F01:** Contrary to 29 CFR 1910.120(p)(5), "New Technology Program," 29 CFR 1910.120(o)(1), "New Technology Programs" and 1910.120(o)(2) WRPS has not established and implemented programmatic procedures which direct the evaluation and

introduction of new technologies into the WRPS Environmental Safety Health & Quality group, which includes the IH program.

**A-09-ESQ-TANKFARM-001-F02:** Contrary to 29 CFR 1910.132(d), 1910.132(d)(1), 1910.132(d)(1)(i), 1910.132(d)(1)(ii), 1910.132(d)(2), 1910.134(c) (1), 1910.134(c)(1)(i), and 1910.120(p)(8), WRPS has not established a written, fully comprehensive decision logic for the selection and use of PPE.

**A-09-ESQ-TANKFARM-001-F03:** Contrary to 10 CFR 851.21, “Hazard Identification and Assessment” there is a lack of specified criteria in the selection of direct reading air monitoring instrumentation and interpretation of results.

**A-09-ESQ-TANKFARM-001-F04:** Contrary to 10 CFR 851.21 and 851.23, there is an absence of written direction to incorporate the mandated goal of reducing worker exposure to carcinogens and all other chemicals to levels ALARA, below the Chemicals of Potential Concern (COPC) OEL.

## OBSERVATION

**A-09-ESQ-TANKFARM-001-O01:** There is a lack of clear, consolidated information. The WRPS IH technical basis is overly complicated and confusing to both workers and outside viewers. There exists an uncharacteristically high element of deference to professional judgment.

## Acronyms

ABIH	American Board of Industrial Hygiene
ACGIH	American Conference of Governmental Industrial Hygienists
AIHA	American Industrial Hygiene Association
ALARA	As Low As Reasonably Achievable
ANSI	American National Standards Institute
CFR	Code of Federal Regulations
CH2M HILL	CH2M HILL Hanford Group, Inc.
COC	Chain of Custody
COPC	Chemicals of Potential Concern
CPC	Chemical Protective Clothing
DOE	U.S. Department of Energy
DRI	Direct Reading Instrument
ESH&Q	Environmental Safety Health and Quality
HCC	Hanford Concerns Council
IH	Industrial Hygiene
IHT	Industrial Hygiene Technician
NIOSH	National Institute for Occupational Safety and Health
OEL	Occupational Exposure Limits
ORP	Office of River Protection
OSHA	Occupational Safety and Health Administration
PAPR	Powered Air Purifying Respirator
PEL	Permissible Exposure Level
PPE	Personal Protective Equipment
SST	Single Shelled Tank
STEL	Short Term Exposure Limit
TFC	Tank Farm Contractor
TFIH	Tank Farm Industrial hygienist
TLV	Threshold Limit Value
VOC	Volatile Organic Compound
WRPS	Washington River Protection Solutions LLC

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APPENDIX A. Principal Document Review and Comments

APPENDIX B. Industrial Hygiene Technical Basis Assessment of WRPS (PLAN), A-09-ESQ-TANKFARM-001

APPENDIX C. Integrated Safety Management System Evaluation Form

APPENDIX D. Assessment Team Biographies

## **1.0 SURVEILLANCE SCOPE**

The scope of this 2009 Phase I assessment of the Washington River Protection Solutions LLC (WRPS) Industrial Hygiene (IH) program, is limited to the foundation of the program, involving an assessment of plans, procedures, risk assessment documents, staff qualifications, and documented management tools. Within this scope, the U.S. Department of Energy (DOE), Office of River Protection (ORP) team addresses the primary question: “Is WRPS properly planning, and effectively managing an industrial hygiene, occupational exposure assessment, and hazards management program that meets the intent of 10 CFR 851?”

## **2.0 SURVEILLANCE METHODOLOGY**

The methodology of the assessment consisted of four discrete efforts, followed by Generator Assistance Program analysis based on the results of the assessment per the DOE 440.1-8, “Implementation Guide for use with 10 Code of Federal Regulations (CFR) 851.” The four elements of the assessment were:

- A review of past assessments conducted by DOE, the Hanford Concerns Council (HCC) – expert panel, the CH2M HILL Hanford Group, Inc. (CH2M HILL) IH Program Health/Analysis presentation to the Executive Safety Review Board (September 25, 2008), WRPS “Industrial Hygiene Safety Management Program Plan-Management Assessment” - 0900116, the WRPS Fact Finding for 702AZ Condensate Drained from Ventilation Duct on December 17, 2008, Report NO. 2008-025; and the National Institute for Occupational Safety and Health (NIOSH), “Health Hazard Evaluation Report 2004-0145-2941;”
- A review and assessment of all available WRPS IH related documents which are generated or owned by the WRPS Environmental Safety, Health, and Quality (ESH&Q) division, plus select and pertinent tertiary documents that are referenced with the IH program documents;
- An evaluation of the IH personnel qualifications by way of a review of staff qualifications cards and through small group interviews of as many staff members as feasible; and
- A series of meetings with the WRPS IH manager and associated review of WRPS IH management records, data bases, and reports that reflect the current level of effort associated with IH trends analysis, program metrics, program planning, budgeting, staffing, self-assessments, and associated corrective actions.

## **3.0 DISCUSSION**

Due to the relatively broad spectrum of the “Industrial Hygiene Technical Basis Assessment Phase I” scope of work; this section is simplified by being organized by the four basic elements, as follows: Review of Past IH Assessments; Document Review; Staff Qualifications; and Program Management. Each of these subsections refers to attachments, which provide specific methods and results or data points. Appendix A is a checklist generated from the performance evaluation criteria, as they pertain to the four primary assessment elements.

### **3.1 Past Tank Farm IH Assessments**

A number of assessments, including two major third-party assessments have been performed on the chemical exposure elements of the Tank Farm IH program, over the last seven years. The two major assessments reviewed include the NIOSH "Health Hazard Evaluation Report 2004-0145-2941," released in July 2004 and the HCC commissioned report by an expert panel, entitled "The Industrial Hygiene Chemical Vapor Technical Basis," dated June 2008. These documents were reviewed to ascertain the historical concerns of the past contractor's program. One management assessment of the IH program was conducted by WRPS, since accepting operations on October 1, 2008, and in addition, ORP surveillance of WRPS response to an abnormal event, included some IH elements.

Under the current WRPS management assessment process, internal staff, including subcontractor personnel, perform an evaluation of the WRPS IH program, submit the results to the IH Program Manager and enter results into the Problem Evaluation Request system for tracking corrective actions. The results of the management assessment (WRPS-0900116, "Industrial Hygiene Safety Management Program Plan-Management Assessment," dated January 19, 2009) indicated four areas in need of improvement, improve an element of heat stress monitoring in a particular survey, maintaining procedures not used on a regular basis, issues on Right-to-Know Stations, and hierarchy of controls required by 10 CFR 851. The WRPS management assessment appears to be comprehensive in nature and some of the observations noted by WRPS are consistent with the ORP Assessment Team's observations, including the issue of some procedures not being updated since the implementation of 10 CFR 851 and deficiencies in the Personal Protective Equipment (PPE) selection process.

There are no WRPS assessments of IH practices during off normal events, other than a fact finding report at this time. The "ORP Management Concern S-09-ESQ-TANKFARM-003 WRPS Response to Abnormal Events" report was in draft form at the time of this assessment. However, it is of value to this assessment, as it provides direction in the review of IH procedures, relative to the chemical exposure risk assessment process, the documented process for selection and use of PPE, post event communications with the Hanford medical provider, selection and use of air monitoring instruments, and identification of exposure source materials.

The tank farm contractor transition briefing entitled "Industrial Hygiene Program Health/Analysis" dated September 25, 2008, provided only minimal amount of performance metrics of the IH program. Having an adequate set of metrics is needed since the overall goal of an IH program is the prevention of occupational disease, illnesses, and disorders that impact the health of workers; interfere with operational stability; and negatively impact the comfort and morale of personnel. As such, metrics that allow for the measurement and tracking of adverse impacts are necessary for the correction of causative factors in meeting this goal. Compliance with standards such as Threshold Limit Values (TLV) is a mandatory, secondary objective that assists in meeting this goal. Effort should be provided in developing leading indicators as much as possible.

### **3.2 Document Review**

#### **3.2.1 General**

The Assessment Team reviewed over 80 WRPS IH related procedures, fact sheets, supporting documents, or sets of documents in the course of the assessment. They were comprised of top tier health and safety and IH management plans, staff qualifications plans and requirements, technical directives, quality assurance directives, operational procedures, performance tracking documents, an exposure monitoring data base, and WRPS web page based hazard communication resources. Appendix A of this assessment contains a list of those documents and observations associated with each document, as warranted.

The collective set of programmatic documents address a cadre of preventative medicine elements including hearing conservation, ergonomics, heat and cold stress, illumination, blood borne pathogens and others addressed in Appendix A. Of these elements, the thrust of the program is dedicated to the evaluation and control of chemical exposures. The chemical monitoring and control aspects of the written programs contain some excellent, advanced level efforts that have been developed as part of the technical basis for the understanding and control of chemical exposure associated with the waste constituents. Documents pertaining to the characterization of tank headspace vapors, personnel exposure sampling results, occupational exposure limits and liquid chemical constituents form the technical basis which serves as baseline risk assessments for the decision logic that follows in procedural documents. In addition, there are documents which provide very specific directions on IH monitoring, procedural processes, PPE, and administrative controls. Many of these documents at the secondary and tertiary levels are highly instructive and self-explanatory.

However, there are four general observations germane to a number of IH related procedures, one of which was also self-identified by WRPS. They are:

- The first is a lack of written core decision logic, which results in excessive deference to an IH professional judgment approach;
- Secondly, the collective state of the programmatic elements are very voluminous, somewhat contradictory (see “Example of Concern” on next page) and difficult to interpret at the implementation level. Both manifestations of the program may be cause for confusion and have a negative impact on the functionality and credibility of the program as a whole, particularly from interested parties not involved in the day-to-day IH operations.
- In addition, a sub-set of programmatic IH procedures pre-dated 2005 should have been revised to include as required by 10 CFR 851.23(a)(9) American Conference of Governmental Industrial Hygienists (ACGIH), “Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices,” 2005 referenced

TLVs when they are lower (more protective) than permissible exposure limits found in 29 CFR 1910. For example, TFC-ESHQ-IH-STD-06, "Hearing Conservation Program," Revision A, dated October 28, 2004, was not revised to include the 2005 TLV, it should be noted the actual TLV in this case was not revised in 2005 it remains, 85 decibels, A-weighting scale [dBA] 8-hr Time Weighted Average;

- Communications between WRPS and AdvanceMed Hanford regarding medical surveillance, is not well defined. Medical surveillance stipulated for either pre-placement or annual exams typically do not provide the medical surveillance requirements to be met by the occupational medical contractor or in the absence of this information feedback – verification that the requirements were met before placement or continued placement. For example, 29 CFR 1910.1001(I), "Medical Surveillance" requires a specific pre-placement examination before an employee can be designated as an asbestos worker but TFC-ESHQ-IH-STD-04, "Asbestos Control – Facility Management/General Industry" does not document how these pre-placement requirements are transmitted to the occupational medical office or verified to have been met before placement;
- Lastly, the programmatic goals fail to address the requirement for monitoring and controlling chemical exposures to As Low As Reasonably Achievable (ALARA), below the Occupational Exposure Limits (OEL). The existing written goal of maintaining exposures below 50% of the OELs is not consistent with the requirements stipulated in DOE Orders, nor with the ACGIH, 2005 TLV booklet, incorporated into 10 CFR 851. The application of an ALARA goal is not only mandated, but is of particular significance to the health and safety of workers who deal with a vast mixture of chemicals, of unknown cumulative toxicological effects. In addition, there is no written consideration of the margin of sampling error associated with the existing sample collection and analysis utilized, nor for the use of Direct Reading Instruments (DRI) to monitor for short term exposure limits.

#### Example of Concern:

TFC-ESHQ-S-IS-C-02-RevB-12 (February 2008) states: "Some of the chemicals in tank waste and condensate can damage the skin, irritate the skin, or be absorbed through the skin"

RPP-34147, Revision 0 (June 2007) states as the last statement of the conclusions: "Therefore, dermal exposure hazards from tank waste is extremely low and requires no additional Controls"

Fact Sheet EH-0607 (October 2007) "Dermal Protection from Tank Waste, Condensate and Tank Vapors" refers to RPP-34147 for direction, suggesting (but unclear) that neither silver shield® Chemical Protective Clothing (CPC) or any other designated CPC is warranted for Tank Farms Operations at the listed tank sites.

### 3.2.2 Lack of Clear, Consolidated Information

WRPS maintains a hierarchy of programmatic documents, which flow down from general, to more specific information and directives. ORP recognizes that such a process is necessary due to the voluminous nature of the materials. However, the process, which has evolved out of response to needs, is cumbersome and sometimes lacks clarity in an end result. As an example, a key document is the “Tank Operations Contractor Health and Safety Plan.” Normally, such a plan contains necessary instructions to workers as a standalone, pragmatic document which addresses eight fundamental subjects, mandated in 29 CFR 1910.120 (P). The sections of the WRPS document that address IH subject matter, collectively refer to 32 links necessary to understand the basic components, which in turn refer to over 200 secondary links. The difficulties in locating and extracting specific, operational IH information were reflected by Industrial Hygiene Technicians (IHT) during a small group interview. Yet the documents as a whole, fail to adequately address three of the eight mandated items. The subjects that are absent or deficient are: 1) Medical Surveillance; 2) New Technologies Program; and 3) Emergency Response, including PPE.

**Example: INDUSTRIAL HYGIENE INSTRUMENTATION PLAN, TFC-PLN-64, REVISION B-1, summarizes the selection of DRIs as a skill of IH Professional decision as follows: “Instruments will be selected by the project Industrial Hygienist (IH) as part of the development of the sampling/monitoring plan and will be based on the hazard to be measured”**

Another confusing element pertains to the “IH Exposure Assessment Strategy” (TFC-PLN-34, Revision D-2), which discusses Short Term Exposure Limits (STEL) Plan and Ceiling Limits, but is non-specific in the application to the strategy. A sub-section in Appendix B of the plan, states: “Ceiling limits are generally airborne concentrations which should never be exceeded...Certain chemicals have STELs or ceiling limits that have unique sample duration periods. Averaging times for the TF COPCs are listed in Appendix B.” However, no further instruction is provided in Appendix B. (Note: this section is referenced as being adapted from the American Industrial Hygiene Association (AIHA) 1998, Leidel 1977, and ACGIH. It appears that the supporting appendices were not included in the WRPS plan.)

#### 3.1.1 Personal Protective Equipment Decision Logic

A key element within the WRPS programmatic directives, which lacks reproducible methodology is that required for the selection of PPE. Although there are a number of good documents describing Chemicals of Potential Concern (COPC) and individual considerations of selection, there is no indication as to what PPE is available onsite; and neither a process nor a defensible, pre determined selection of PPE, which can be consistently utilized by the IH Staff.

### 3.2.3.1 Chemical Protective Clothing and Chemical Eye Protection

A review of documents related to PPE discuss tank waste chemical constituents relative to dermal exposure, but fall short of a discussion of the specific selection of CPC and eye protection associated with the toxicants of the waste and a pH of 13 (highly corrosive). In addition, there is no consideration of precautionary measures for such off normal effects as a splash involving a high body surface area, and/or the eyes. The “Personal Protective Equipment” TFC-ESHQ-S-C-02 is the baseline directive for the selection of chemical protective clothing and eye protection, yet the section on eye protection is limited to safety glasses for impact protection only. The CPC and glove section of The “Industrial Hygiene Exposure Assessment Strategy” TFC-PLN-34 D-2, refers to this document for direction on skin protection. A supporting document, the “Tank Waste Dermal Exposure Assessment” RPP-34147, serves as an extensive study of potential chemical absorption and justification for not issuing Silver Shield® or 4H® gloves for stipulated tank farms. However, each of the documents fail to address the following significant items:

- Protection from skin burns or dermatitis due to chemical contact of the hands;
- Protection from skin burns or large surface area chemical absorptions, from a large scale splash;
- the health impacts and protection of the eyes associated with liquid splash; and
- the documents collectively fail to provide a pre-determined decision or a clear decision process for the selection and service life of CPC. Such common considerations associated with multiple chemical breakthrough times, permeation rates, and degradation of various materials used in the selection and use of CPC is absent.

**Note:** TFC-ESHQ-S-IS-C, Rev B-12 (PPE), Section 6.3.1 states that *some chemicals in tank waste and tank condensate can damage the skin, irritate, or be absorbed by the skin and to consult IH in the work planning process.*

The IH technical basis requires CPC decision logic and methodologies. The level of effort necessary to fill in the gaps is potentially minor, but significant to the process.

### 3.2.3.2 Respiratory Protective Equipment

The Tank Operations Contractor Health and Safety Plan states the following:

“Personal protective equipment includes use of respiratory protection approved by Industrial Hygiene, either as specified in job procedures, Tank Vapor Information

Sheets, or job hazard analyses or through voluntary use even though not required for compliance with the occupational exposure limit.”

In addition, the WRPS Respiratory Protection Plan is a 54-page document, of which two pages of text and a single page figure are provided on the subject of respirator selection. The information provided, is in general terms and includes a statement that “**Specific guidance for respirator selection is available from NIOSH and OSHA.**” Neither document provides specific information that is relevant to what respirator options are available to WRPS, the applicability of respirator cartridges to various COPCs, including carcinogens or mixed contaminant considerations; and those respirator ensembles that are not approved for specific applications, such as an acid gas cartridge is not approved for nitric acid nor hydrogen sulfide gas. No other documents were observed to address the decision logic for consistent decision making by IHs throughout the program.

During the course of interviews one IH professional discussed a recent event, in which a small quantity of methylene chloride was spilled and the IH was tasked with taking photos of the spill scene. The IH professional judged the exposure was below the TLV for methylene chloride, but utilized respiratory protective equipment on a voluntary basis. The respirator selected for the task was a Powered Air Purifying Respirator (PAPR) with (presumably) an organic vapor cartridge. The use of a PAPR was made in error, on two accounts: 1) PAPR is not approved for methylene chloride by manufacturers due to poor adsorption to activated carbon; and 2) Occupational Safety and Health Administration (OSHA) specifically mandates the use of supplied air respirators for potential exposure to methylene chloride vapors exceeds the Permissible Exposure Limit (PEL) or STEL (29 CFR 1910.1052(g)). In addition, there was no documented effort to perform a simple ventilation calculation to document the PEL or STEL was not exceeded. The professional judgment exercised in this situation demonstrates a potential outcome associated with the lack of written selection protocols and directions. Additionally, there is no common mode of documentation on the selection process of respiratory protection by the IH Professional. This in turn, leads to the inability of a technical peer review and a single point error for the respiratory selection process. Professional judgment alone is an insufficient technical basis for the selection of respiratory protection. WRPS must identify decision logic for unilateral application at tank farms.

### 3.2.4 Clarification of DRI Applications and Decision Logic

There are excellent documents within the WRPS program, which describe the use and calibration of IH instruments and a significant amount of data available for the characterization of COPCs. However, there is an absence of written directives or fact sheets that specifically demonstrate the applicability of some DRIs relative to what is being surveyed in sampling plans and the basis for turn back values. There are also tables which list the COPCs and the appropriate instrument or reference to a pump or SUMA® method, however, there is no summary for such operational and interpretative needs as the detection limits for the DRIs, cross sensitivity & correction factors, the range

relative to the COPCs and therefore, what determines a DRI action level. This absence of standardized criteria was reflected in an interview with IHTs, as inconsistencies in the assignment of DRIs for similar operations by different IHs. The following example indicates a failure associated with the absence of decision logic:

**Example:** Tank Farm Work Instruction WDL#111243, dated December 12, 2008, calls for the monitoring of organic and ammonia vapor, yet provides action levels for the described task as follows:

- Organic Vapors 2 ppm
- Ammonia 12 ppm
- Formaldehyde 0.2 ppm

*The following failures occurred:*

1. Formaldehyde cannot be detected by the prescribed instruments\*.
2. Formaldehyde, by virtue of multiple toxicological risks, including carcinogenicity, irritation, and pulmonary sensitization, is a priority COPC, as evidenced by the lowest OEL.
3. Yet, the document fails to identify that the formaldehyde OEL is a ceiling value, meaning that an exposure of 0.3 ppm is not to be exceeded. This is a contradiction to the WRPS IH Exposure Assessment Plan (3.11) that mandates screening COPCs and controlling exposure to below 50% of the OEL. Not only is the action level above 50%, these action levels are intended for time weighted average exposures – not ceiling limits, which could instantaneously be exceeded.

\*ORP confirmed that formaldehyde is a not COPC to be monitored at this location per the TVIS, and reference was mistakenly made on this work instruction.

ORP confirmed that formaldehyde is not a COPC to be monitored at this location, per RPP-RPT-29262, A-Prefix Tank Farms Vapor Hazard Characterization Report, Revision 0 and this reference was a quality assurance error on the work instruction, not a technical omission.

The WRPS IH technical basis does not offer a clear, documented decision logic and justification for utilizing or not utilizing DRIs for assessing possible excursions of exposure above baseline personal exposure data, as stated in Section 3.11 of TFC-PLN-34, Revision D-2, "IH Exposure Assessment Strategy." This plan does identify in Attachment E, a series of factors to be considered in the establishment of DRI action limits, and states: "The Safety and Health Director will review current screening action levels for appropriate conservatism," - a reference to professional judgement. Therefore, in the absence of decision logic, a review was conducted of the flow down of documents on this subject, which included the Tank Farm Chemical Exposure Hazard Analysis (series of reports), Tank Farms Vapor Characterization Report (series), Management of Vapor Control Zones, Instrumentation instructional documents (series), Fact Sheet:

"Monitoring for COPCs in the Tank Farm," and representative IH Monitoring and Sampling Plans, and Work Hazard Analysis documents. Questions that remain, would then include: Which Volatile Organic Compounds (VOC) are detected within the range and sensitivity of a 10.6 ev Photo Ionization Detector and which are not? When is a flame ionization detector then used and for what sub section of the COPCs? What common non VOCs such as N-Nitrosomethylethylamine, nitrous oxide, and mercury are not being monitored and why not? Are correction factors applied to combustible gas indicators calibrated with isopentane, but used primarily for hydrogen monitoring? What are the margins of error and interfering compounds to be considered for use of DRIs? These elements of the IH Exposure Assessment strategy appear to be absent. ORP recognizes that DRIs are an important element of the overall strategy, and that there are limitations in their application; however, the process of determining the use, limitations, and associated applications must be documented, to support designated use.

Formaldehyde has a ceiling value (not to be exceeded) of 3 ppm, but a WRPS action level of 2 ppm. The accuracy of the detector tube may range from +/- 35% to +/- 50%, which indicates that ceilings could be exceeded before actions are initiated. In addition, detector tubes are cumbersome, time consuming to operate, and difficult to read. The logistics of the DRI sampling and the margin of error suggest that either the action level or the mode of DRI sampling may not have been subjected to the same decision logic as other COPCs, indicating inconsistency.

### **3.3 STAFF QUALIFICATIONS**

WRPS has an extensive staff of 54 IH professionals, which includes 3 managers (of which one is certified in IH), 9 industrial hygienists (of which 5 are certified in IH) and 32 IHTs, who are represented under the collective bargaining agreement.

There are qualifications standards which identify baseline requirements and responsibilities for IH Professional (TFC-BSM-TQ-STD-01, "Technical Staff Qualification Requirements") and IHT (TFC-BSM-TQ-STD-07, "Industrial Hygiene Technician Training and Qualification Requirements.") In addition, WRPS maintains both IH and IHT qualification cards (350882, "Qualification Card for Industrial Hygiene Professional," Revision 0804.1 and 350292, "Qualification Card for TOC Industrial Hygiene Technician," Revision 0608.1). The process does not separately address specialty positions such as the IHT Lead nor does it address any special requirements for the IHT responsible for being the IH equipment custodian or respiratory protective equipment custodian.

The IH professional qualifications standard and process is relatively rigorous. The IH professional qualification process is primarily directed at having a Bachelors degree in IH or related science, two years of IH experience and one year of IH experience in the nuclear industry or equivalency; plus extensive required reading, self-study and procedural

orientation. The IH professional is required to obtain 24 hours of continuing education per year. A majority of the IH professionals on staff hold current certifications through the American Board of Industrial Hygiene (ABIH). A sample review of completed IH professional qualification card was not part of the scope of Phase I of the assessment.

The IHT qualification process requires an Associate Degree in safety and health technology, applied science or related science, one year job related experience or equivalent combination of education and experience plus extensive in-house training on fundamentals and instrumentation. The IHT process does include hands on training in the classroom and periodic updates on seldom used instruments. Sample observations of IHT process qualification or requalification was not part of this assessment, but will be part of the Phase II assessment.

Feedback from group interviews involving 31 of the 54 IH professional staff found them to be very aware of the Tank Farm IH issues. The majority of the IH professionals on staff have extensive commercial and DOE Complex experience in the subject areas of the assessment. The IH professional staff was very open and provided their candid professional opinion of the current WRPS IH program and areas for possible improvement (e.g., training). A common question asked by the Assessor's during the interviews were on the subject of level of effort expended on tank farm vapor sampling – over board, too little or just right. The consensus was that the vapor sampling was larger than should be in relationship to the commercial industry but it was understood and accepted. The morale of the IH Professional staff seems to be holding up during the last few years both CH2M HILL/WRPS have been able to maintain a high level IH staff (it should be noted a current WRPS employee is going to take part one of the ABIH certification process this coming June). There was common consensus among the WRPS IH professional staff that there is generally room for improvement of the program but no other portion of the IH program is Less Than Adequate due to the attention being given to the Tank Farm vapor issue. Another common question asked by the Assessor's during the interviews was in regards to the nature of interface or projects which ally the fear of workers and result in a prudent level of risk information regarding Tank Farm vapor issues; for which several interfaces were described including the Chemical Vapor Solutions Team, Presidents Council, and Chemical Hazard Awareness Training. However, it appears a sustained effort to provide risk information to workers about historical and ongoing sampling results, including IH instrument capabilities and limits in relation to the radiological instrumentation has not been accomplished.

The control of IHT field data forms, Chain of Custody (COC), conveyance to IH records, management of sampling data, and distribution of employee occupational exposure notification is controlled by TFC-ESHQ-S\_IH-C-46, "Industrial Hygiene Reporting and Records Management," Revision B-1. The electronic record copy of sampling is maintained on the Tank Farm Industrial Hygiene (TFIH) database from transposed field notes and backed up every evening on hard drive. During discussions with the first group of IHT it was very clear they understood the rules of COC. The ORP field observations of sampling taken by IHTs and conveyance of the sample media through processing and records management will be a portion of the Phase II assessment. Interviews with the WRPS personnel responsible for maintaining the TFIH database appear to be well versed in the capability of

TFIH database and associated software. The TFIH database software is currently maintained by Lockheed Martin Services, Inc.

A majority of the IHT have at least five or more years experience working as IHT in Tank Farms or at the Hanford Site. Based on interviews the IHTs who have responsibility as the IH equipment custodian and respiratory expert have extensive knowledge (both have over 20 years Hanford experience) of their respective fields and were able to discuss in adequate detail technical subjects of their respective assigned job areas. One follow up question to WRPS management was on the succession planning in case either IHT decides to retire, the feedback provided was that the respiratory protection program is well covered but given the technical complexity of the IH equipment custodian duties, there were succession issues which are being actively pursued. The Field IHTs appear to have an adequate understanding of the basics of the most commonly used IH instruments. Based on response to questions, the IHT provided a mixed response to the ease of use of IH procedures and sampling plans, on occasion a work pause was needed for clarification. Another common theme among the IHT, was there was different responses based on the same vapor hazard between Base Operations, Single-Shell Tank (SST) Retrieval, and Closure, including the area of down posting a Vapor Control Zone. Not all IH sampling plans require personnel monitoring/sampling in the absence of it being mandated as part of the work task. There is a general reluctance for worker's to wear the sampling apparatus on a voluntary basis, as there is a complaint of it being cumbersome.

### **3.4 Program Management**

The WRPS IH Management efforts address a cadre of departmental elements such as staff training, budgeting, data management, quality assurance, scheduling, review and updating of written programs, and strategic planning. WRPS IH program management is centered within the ESH&Q group of WRPS, although the majority of IH personnel are deployed to Base Operations or SST Retrieval and Closure for operational support. The IH program manager is a Certified Industrial Hygienist and responsible for central functions such as program metrics, data management, technical basis risk assessments, and primary procedural components.

### 3.4.1 Goals, Metrics and Trends Analysis

The current state of the sample data is relatively unprocessed, other than through the tracking of constituent results above the 10% and 50% OEL status for existing COPCs. However, WRPS is currently in the process of re-assessing the baseline data acquired. As part of this effort, they are planning the consolidation of the data, in a manner which allows for the assessment of both the statistical approach to be used in a re-characterization of potential exposures and in the identification of data gaps. This effort will in turn, drive the number and location of additional screening and routine monitoring efforts. The methodology will reportedly be developed in conjunction with an independent expert IH panel.

There is an ongoing effort to consolidate data and assimilate upward or downward trends in other IH program elements such as hearing conservation, non-ionizing radiation, heat stress, cold stress, and ergonomics. It is noteworthy that WRPS IH managers and staff appear to agree per interviews, that the vapor control program has monopolized their resources and there is some frustration that: 1) they have exceeded industry standards in addressing the concern; 2) there is no serious vapor health threat; and 3) other programmatic areas of need are not being addressed as they would prefer.

Example of WRPS Sampling Strategy under consideration			
Frequency of sampling (low-high)			
Carcinogen	H	H	H
Highly Toxic	M	H	H
Irritant	L	M	H

% of OEL----->

### 3.4.2 The Role of Professional Judgment

WRPS points out that it maintains a high caliber of staff and that professional judgment is a necessary element to the program. In the factual accuracy response, WRPS states: "The American Conference of Governmental Industrial Hygienists and the American Board of Industrial Hygiene both recognize that professional industrial hygienists must evaluate data and information and make professional judgments."

ORP recognizes not only the value, but the necessity of professional judgment - particularly in the event of off normal operations. Such judgments is based not only on training and experience, but also on baseline programmatic guidelines that have been reviewed, approved, and incorporated into the programmatic foundation of the health and safety program. It is neither feasible nor desirable to attempt to dictate directives for variables that occur with environmental and operational dynamics. However, the fundamental methods in which decisions will be made, in a consistent, defensible mode is essential to the credibility of the program. As an example, NIOSH, arguably the international subject matter expert on respiratory devices devotes 41 pages to the process

of respirator selection in the “NIOSH Guide to Industrial Respiratory Protection.” A professional judgment is required in the understanding and application of this document. However, the narratives, checklists and flow charts are provided to “insure uniformity and adherence” to established methods established jointly by NIOSH and the Occupational Safety and Health Administration (OSHA). Similar guides, established as industry standards are available for the selection of CPC, eye protection and other PPE elements. All of these guides require professional judgment in the application process, with respect to the vast mixture of COPCs and environmental conditions. What is missing from WRPS is clearly stated policies with respect to: 1) the need; 2) the application; 3) WRPS inventory or options available; and 4) standard methods for decision making.

ORP acknowledges that WRPS has some elements of the selection process incorporated into programmatic documents, such as a discussion of the service life of respirator cartridges and an extensive study on the application of silver shield® gloves and mercury exposure. Yet, there are major elements missing and most importantly, no standard means of directing the use of those elements in a cohesive fashion, and there is no defined process for documenting the basis for the decisions made in the absence of standard methodologies.

The same is true with respect to broad range DRIs. Table 1 of the “Monitoring for COPC in Tank Farm Vapors” list instruments that respond to multiple COPCs, but does not address the means of discriminating amongst those with very low TLVs and those that have high TLVs. There appears to be a mandate for utilizing detector tubes for some, and broad range instruments such as the TVA and ppbRAE for others. Some COPCs appear to be monitored by either option. The argument of utilizing professional judgments for the selection of instruments is only defensible, in the presence of a sound technical basis, which provides each IH with the pre determined range, sensitivity, correction factors and unknowns associated with the DRI table. To assume that each IH has performed this task independently in a correct, consistent manner and maintains the basis for the decision logic is not prudent. In addition, there is no evidence to suggest that such factors and thought process, are in turn, documented with each work instruction or operational document.

The level of effort required to either: 1) provide pre established decisions for PPE and DRIs for the waste and condensate per Tank farm; or 2) to provide decision logic directly, with the aid of internet links is minimal. To have this fundamental element absent from both a written PPE plan and sampling strategy plan is not the industry norm.

## **4.0 CONCLUSIONS**

### **4.1 Positive observations and trends**

- The breadth and detail of most programmatic WRPS IH documents is very good.
- The effort on evaluating baseline chemical hazards has been very advanced.

- The program for control, conveyance, and management of sampling data appears to be exceptional.
- The WRPS Staff offers considerable experience, held to high qualification standards, self-confident and professional.
- The WRPS IH related instrumentation, data base, and overall resources are exceptional.
- WRPS is upgrading risk communication process, including the use of outside subject matter experts.
- WRPS is pro actively supporting an independent panel for additional vapor monitoring and control considerations.
- WRPS is reportedly improving worker access to material safety data sheets through the establishment of an electronic on-line Material Safety Data Sheets program. This action appears to be prompted by two observations that result from the WRPS self-assessment, finalized on January 19, 2009.

#### **4.2 Opportunities for Improvement**

- The compendium of IH Information and directives could be consolidated for IH and workers, in a manner more easily acquired and understood.
- WRPS should incorporate exposure characterization and control goals and objectives into the IH technical basis.
- WRPS should define the range for professional judgment within the IH program to a reasonable extent within the technical basis documents.
- WRPS should review and evaluate worker occupational illness reporting as an element of the hazard identification and assessment process, per 10 CFR 851.21(7) and 10 CFR 851.26 94)(b). The consideration of reported target organ or systemic effects and related causative agents within the tank farm may be an important added element of the IH strategy. The overall goal of the compliance with this requirement being the evaluation of reports in a manner which allows reconsideration of the effectiveness of current protective measures with regards to the monitoring and control strategy. For example, in the event that asthma and related reactive airways disease is identified as a complaint of tank farm workers and recognizing that formaldehyde [a COPC] has a causal link to asthma, special consideration may then be directed at increasing the nature and frequency of formaldehyde monitoring.

#### **4.3 Assessment Follow-up Items**

As part of a future assessment (Phase II), actual field implementation of the documented WRPS IH program will be evaluated with special emphasis on:

- Observations of IH Technicians going through re-qualification or initial qualification, actual sampling (source, personnel, or area) and processing of sample media for laboratory analysis and execution of the Work Instructions/Job Hazard Analysis (TFC-ESHQ-S\_SAF-C-02, “Job Hazard Analysis,” Revision D-5). The IH Professionals qualification card process consists mostly of required reading with some actual case studies like assigning DRIs and sample data analysis.
- Per several months of observation, formal interviews, and review of one off-normal event (702-AZ); there is a general concern that the prevailing opinion within the WRPS IH department, that Tank Farm static chemical vapor and condensate exposures are fully characterized and controlled, is having negative impacts the degree of WRPS vigilance in anticipating, preparing for, and responding to off-normal events and secondarily, assessments of new or improved control measures. As part of Phase II the assessors will perform field assessment of drills for off-normal waste release and actual should any should occur.
- The process of decision making in regards to PPE and instrumentation shall be closely evaluated.
- The monitoring, controls and associated documentation of off-normal event decision making.
- The effectiveness of the sample and data quality assurance process.
- The nature of the safety culture within WRPS.

### **5.0 FINDINGS AND OBSERVATIONS**

#### **5.1 Findings**

**A-09-ESQ-TANKFARM-001-F01:** Contrary to requirements WRPS has not established and implemented programmatic procedures which evaluate and introduce new technologies into the WRPS ESH&Q Assurance group, nor IH program. WRPS has clear evidence that portions have been made, such as the addition of upgraded IH instrumentation. A formal and concerted effort to periodically evaluate new technologies for worker health and safety is an important, but missing feature of this high end health and safety program.

**Requirements:**

29 CFR 1910.120(p)(5), “New Technology Program” The employer shall develop and implement procedures meeting the requirements of paragraph (o) of this section for introducing new and innovative equipment into the workplace.

1910.120(o)(1): The employer shall develop and implement procedures for the introduction of effective new technologies and equipment developed for the improved protection of employees working with hazardous waste clean-up operations, and the same shall be implemented as part of the site safety and health program to assure that employee protection is being maintained.

1910.120(o)(2): New technologies, equipment, or control measures available to the industry, such as the use of foams, absorbents, neutralizers, or other means to suppress the level of air contaminants while excavating the site or for spill control, shall be evaluated by employers or their representatives. Such an evaluation shall be done to determine the effectiveness of the new methods, materials, or equipment before implementing their use on a large scale for enhancing employee protection. Information and data from manufacturers or suppliers may be used as part of the employer’s evaluation effort. Such evaluations shall be made available to OSHA upon request.

**Discussion:**

WRPS has not established and implemented programmatic procedures which evaluate and introduce new technologies into the WRPS ESH&Q Assurance group, nor IH program. There is clear evidence efforts have been made, such as the addition of upgraded IH instrumentation. However, given the history of the tank farm vapor exposure monitoring & controls challenges and the history of abnormal events, a formal and concerted effort to periodically evaluate new technologies for worker health and safety is an important, but missing feature of this high end health and safety program.

**A-09-ESQ-TANKFARM-001-F02:** Contrary to requirements WRPS has not established written, comprehensive decision logic for the selection and use of PPE. WRPS has developed risk assessment documents, as well as a respiratory protection plan and PPE plan. However, there are no defined action levels and selection criteria available for review for respiratory protective equipment, CPC, nor chemical protection of the eyes; and there is no element that addresses the selection process or protocol of use for an emergency response.

**Requirements:**

29 CFR 1910.132(d): Hazard assessment and equipment selection.

29 CFR 1910.132(d)(1): The employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of PPE. If such hazards are present, or likely to be present, the employer shall:

29 CFR 1910.132(d)(1)(i): Select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment;

29 CFR 1910.132(d)(1)(ii): Communicate selection decisions to each affected employee;

29 CFR 1910.132(d)(2): The employer shall verify that the required workplace hazard assessment has been performed through a written certification that identifies the workplace evaluated; the person certifying that the evaluation has been performed; the date(s) of the hazard assessment; and, which identifies the document as a certification of hazard assessment.

29 CFR 1910.134(c) (1): In any workplace where respirators are necessary to protect the health of the employee or whenever respirators are required by the employer, the employer shall establish and implement a written respiratory protection program with worksite-specific procedures... The employer shall include in the program the following provisions of this section, as applicable:

29 CFR 1910.134(c)(1)(i): Procedures for selecting respirators for use in the workplace;

29 CFR 1910.120(p)(8): Elements of an emergency response plan. The employer shall develop an emergency response plan for emergencies which shall address, as a minimum, the following areas to the extent that they are not addressed in any specific program required in this paragraph.

29 CFR 1910.120(p)(8)(ii)(K): PPE and emergency equipment (other items not included).

**Discussion:**

WRPS has developed risk assessment documents, as well as a respiratory protection plan and PPE plan. However, there are no defined action levels and selection criteria available for review for respiratory protective equipment, CPC, nor chemical protection of the eyes; and there is no element that addresses the selection process or protocol of use for an emergency response. In addition, there is an absence of service life criteria for CPC. The absence of a decision process or a documented, designated CPC material extends beyond the chemical oriented elements of the program and includes a deficiency in the Bloodborne Pathogen Exposure Control Plan. These items are of the most basic type of information to be made available to workers through the written safety and health program. A number of IH documents make reference to consulting the IH, deferring to the IH "professional judgment."

**A-09-ESQ-TANKFARM-001-F03:** There is a lack of specified criteria in the selection of direct reading air monitoring instrumentation and interpretation of results. There is an absence of specific methodology on the selection and interpretation of nine or more different DRI used to monitor for the acute hazard of COPC. Such DRI warrant both clear decision logic for selection and instructions of interpretation relative to other instrument readings. The results associated with the lack of written guidance and criteria was manifested in the WRPS response to the 222-S methylene chloride spill, in which the 10.6 ev Photoionization

detector was used in error, as the basis for the release of the work area. The manufacturer's literature clearly identifies that this instrument does not detect a chemical such as methylene chloride, which has an ionization potential higher than 10.6 ev.

**Requirement:**

**10 CFR 851.21, "Hazard Identification and Assessment"**

- (a) Contractors must establish procedures to identify existing and potential workplace hazards and assess the risk of associated workers injury and illness. Procedures must include methods to: Assess worker exposure to chemical, physical, biological, or safety workplace hazards through appropriate workplace monitoring;

**Discussion:**

Despite considerable attention to COPC, air monitoring strategies, and instrument operation, there is an absence of specific methodology for the selection and interpretation of the nine or more different DRI used to monitor for the acute hazard COPC (as listed in EH-06-004). Selection and data interpretation of some DRI such as the use of the iTX ammonia meter for ammonia measurement is self-evident. However, other DRI such as the ppbRAE, the Miran 205B, and the TVA-1000 respond to multiple chemicals at different sensitivities and react to multiple interfering compounds. Such DRI warrant both clear decision logic for selection and instructions of interpretation, relative to other instrument readings. In addition, there is no direction provided for the use of detector tubes with regard to the same. Such reliance on "Professional Judgment," at this significant level of decision making creates the potential for errors, departmental inconsistency, an absence of written documentation, and an inability to audit program performance against standardized procedures.

**A-09-ESQ-TANKFARM-001-F04:** There is an absence of written direction to incorporate the mandated goal of reducing worker exposure to carcinogens and all chemicals to levels ALARA, below the TLV.

**Requirements:**

**10 CFR 851, 10 CFR 851.21, and 10 CFR 851.23** The 2005 ACGIH TLV booklet states "...carcinogens, worker exposure by all routes should be carefully controlled to levels as low as possible, below the TLV"

10 CFR 851.21(4), "Hazard Identification and Abatement," that the "contractor must analyze designs of new facilities and modifications to existing facilities and equipment for potential workplace hazards" and 10 CFR 851.22, "Hazard Prevention and Abatement," contractors must establish and implement a hazard prevention and abatement to ensure...

DOE Standard 1189-2008, "Integration of Safety into the Design Process" – Section 7.10, "Hazardous Material," similar to radiological hazards, DOE requirements invoke an ALARA concept for the protection of workers from hazardous materials. Design should support the

primary objective of reducing the frequency, severity, and cost of incidents involving hazardous material, as well as the cost of hazardous operations. Prevention practices, such as substitution of less hazardous materials in a project or design of a process to reduce generations of hazardous waste, should be examined prior to consideration of protection strategies. Protection strategies will generally involve confinement strategies, such as gloveboxes, piped systems, and tanks, as well as administrative controls. The approach will typically be driven by the magnitude of the hazard and inventory. Similar to radiological hazards, DOE requirements invoke an ALARA concept for the protection of workers from hazardous materials.

DOE-STD-3009-94, "Preparation Guide for U.S. Department of Energy Non-Reactor Nuclear Facility Documented Safety Analyses," Chapter 8, "Hazardous Material Protection"

#### **8.4 ALARA POLICY AND PROGRAM (DOE-3009-94)**

This section summarizes the ALARA policy and program for the facility. Historically, hazardous materials, unlike radioactive materials, have often been evaluated assuming de-minimis level below which little harm is associated with exposures (e.g., OSHA PELs). Where this is the case for given subject matter, ALARA needs to be considered a qualitative concept evaluated against OSHA and IH exposure standards and guidelines.

#### **8.4 ALARA POLICY AND PROGRAM (TF DSA)**

The hazardous material protection program ensures that exposures to hazardous materials are below regulatory limits and at a level ALARA. ALARA concepts are employed at the tank farms for hazardous material protection. The goal of ALARA is to reduce the level of hazardous materials and the effects of those materials at the source, and thereby mitigate any effects on workers, the environment, or the public. ALARA also ensures that exposures are kept to the lowest levels and within the limits set by governing authorities (i.e., OSHA PELs, ACGIH TLVs, and DOE directives). Procedures, instructions, and standards ensure exposures are kept to a minimum based on the requirements and provisions of DOE Orders, OSHA regulations, national consensus IH standards, and recommended practices. The IH programs pertaining to hazardous material protection at the Tank Farm Contractor (TFC) facilities utilize elimination/substitution of materials, engineered controls and features, administrative controls, and PPE.

To minimize the use of, and exposure to, hazardous materials, purchase requisitions are reviewed for products that contain or that may result in the production of hazardous chemicals; where possible, less hazardous materials are substituted. In addition, the TFC oversees contractor and subcontractor construction activities at TFC facilities to minimize exposures to hazardous materials through worksite inspections following the requirements of DOE O 440.1A.

## 5.2 Observations

**A-09-ESQ-TANKFARM-001-O01:** There is a lack of clear, consolidated information the WRPS IH technical basis is overly complicated and confusing to both workers and outside viewers. There are a number of significant conflicting statements regarding such important elements as PPE and air monitoring requirements. In addition, there are numerous links within key documents that refer the reader to a secondary set of documents, which in turn refer the reader to a tertiary set of documents.

### Discussion:

The WRPS IH Technical Basis is overly complicated and confusing to both workers and outside viewers. There are a number of significant conflicting statements regarding such important elements as PPE and air monitoring requirements. In addition, there are numerous links within key documents that refer the reader to a secondary set of documents, which in turn refer the reader to a tertiary set of documents. Another concern is the listing of extensive readings for the implementation of a single IH task of noise dosimetry (TF-OPS-IHT-0015), which states “the following documents may be needed to perform this procedure” then lists 16 major documents, including TLV books, CFR, American National Standards Institute (ANSI) docs, and others.

### Assessment Follow-up Items

**A-09-ESQ-TANKFARM-001-AFI01:** There is a WRPS IH consensus that the tank farms vapor hazards is static and fully characterized, which results in a WRPS IH Departmental mentality that limits vigilant assessment of day-to-day considerations of abnormal events, assessment of new or improved control measures; and interpretation of results. In follow up assessment (Phase II), the following subject areas will be looked at: The nature of the safety culture within WRPS, observations of IH Technicians going through re-qualification or initial qualification, actual sampling (source, personnel, or area), the processing of sample media for laboratory analysis and execution of the Work Instructions/Job Hazard Analysis, field observations of drills for off-normal waste release (and actual should any occur), the monitoring, controls, and associated documentation of abnormal event decision making, and effectiveness of in field sample and data quality assurance process.

## 6.0 REFERENCES (From DOE Standard IH Practices, DOE-STD-6005-2001 April 2001)

### 6.1 Government Documents

#### DOE Directives (Policy, Orders, Handbooks, and Technical Standards)

- a. CFR 1910 Part 851 Replacing DOE O 440.1A, Worker Protection Management for DOE Federal and Contractor Employees.
- b. DOE O 450.4. Safety Management System Policy.

- c. DOE O 450.5. Line Environment, Safety, and Health Oversight.
- d. DOE G 440.1-1, Worker Protection Management for DOE Federal and Contractor Employees Guide for Use with DOE O 440.1.
- e. DOE G 440.1-2, Construction Safety Management Guide for Use with DOE O 440.1.
- f. DOE G 440.1-3, Occupational Exposure Assessment, Implementation Guide for Use with DOE O 440.1.
- g. DOE G 440.1-4, Contractor Occupational Medical Program Guide for Use with DOE O 440.1.
- h. DOE G 440.1-7, Implementation Guide for Use with DOE N 440.1-7, Interim Chronic Beryllium Disease Prevention Program.
- i. DOE Standard 1189-2008, "Integration of Safety into the Design Process."
- j. DOE Standard 3009, Preparation Guide for U.S. Department of Energy Non-Reactor Nuclear Facility Documented Safety Analyses
- k. GUIDES: DOE G 441.1-2 Occupational ALARA Program Guide

**DOE-STD-6005-2001** 2 i. DOE O 5480.10A, Contractor IH Program.

- **Other Government Documents**

- a. U.S. Department of Labor, OSHA, "Field Inspection Reference Manual."
- b. U.S. Department of Labor, OSHA, "Technical Manual."
- c. U.S. Department of Labor, OSHA, Title 29 CFR, Part 1910, Occupational Safety and Health Standards, and Part 1926, Safety and Health Regulations for Construction.
- d. U.S. Department of Labor, OSHA, Title 29 CFR, Part 1960, Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters.

## **6.2 Non-Government Documents**

- a. ACGIH, "Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices" (Latest edition).
- b. American Conference of Governmental Industrial Hygienists, "Industrial Ventilation: A Manual of Recommended Practice" (Latest edition).

- c. Joseph Damiano and John R. Mulhausen (Editors), "A Strategy for Assessing and Managing Occupational Exposures," 2nd edition. AIHA, Fairfax, VA (1998)
- d. Salvatore R. DiNardi, (Editor), "The Occupational Environment. Its Evaluation and Control," AIHA, Fairfax, VA (1997)
- e. ANSI, latest version of various standards including, but not limited to:
  1. ANSI Z 88.2, .Respiratory Protection.
  2. ANSI Z 88.6, .Physical Qualifications for Respirator Use.
  3. ANSI Z 117.1, .Safety Requirements for Working in Tanks and Other Confined Spaces.
  4. ANSI Z 136.1, .Safe Use of Lasers.
  5. ANSI Z 358.1, .Emergency Eyewash and Shower Equipment.
- f. American Society of Heating, Refrigerating, and Air Conditioning Engineers, "ASHRAE Handbook and Product Directory," volume on Fundamentals.

### **6.3 Personnel Interviewed**

- 6.3.1 WRPS ESH&Q Safety and Health Manager
- 6.3.2 WRPS ESH&Q Business Operations Industrial Safety/IH Manager
- 6.3.3 WRPS ESH&Q Business Operations IH Manager
- 6.3.4 WRPS SST Retrieval & Closure Safety and IH Manager
- 6.3.5 WRPS Industrial Hygienists (7 total)
- 6.3.6 WRPS Industrial Hygiene Technicians ( 20 total)

### **6.4 Documents Reviewed**

- 6.4.1 Integrated Environment, Safety, and Health Management System Description for the Tank Operations Contractor, RPP-MP-03
- 6.4.2 Worker Health and Safety Requirements Implementation Matrix, TFC-ESHQ-S SAF-CD-11
- 6.4.3 Worker Health and Safety Program, TFC-PLN-47, RPP-27195

- 6.4.4 Industrial Hygiene Safety Management Program Plan TFC-PLN-55
- 6.4.5 Tank Operations Contractor Health and Safety Plan TFC-PLN-43, Revision A-12
- 6.4.6 IH Exposure Assessment Strategy RPP-27195 TFC-PLN-34 R-D-2
- 6.4.7 Beryllium TFC-PLN 24
- 6.4.8 ASBESTOS PROGRAM, RPP-MP-625, Revision
- 6.4.9 Risk Management Plan TFC-PLN-39 Revision C
- 6.4.10 Emergency Management Program Plan TF-PLN-85
- 6.4.11 Tank Farm Contractor Training and Qualification Plan TFC-PLN-64
- 6.4.12 Technical Staff Qualifications Requirements USQ-GCX-2
- 6.4.13 IH Tech and Qualifications Requirements TFC-BSM-TQ STD-07 RC
- 6.4.14 Subcontractor Oversight ESH&Q TFC-ESHQ-S\_SAF-C-07, Revision B-5
- 6.4.15 EMPLOYEE JOB TASK ANALYSIS TFC-ESHQ-S\_IH-C-17, Revision B-3
- 6.4.16 IH Deports and Documents (Safety & Health Programs-web page) Dermal Exposure Study & Waste Disturbing Activities Vapor Characterization.
- 6.2.17 IH Reporting & Records Management TFC-ESHQ-S\_IH-C-46
- 6.2.18 Managing Vapor Control Zones TFC-ESHQ-S\_IH-C-48
- 6.2.19 Chemical Management Process TFC-ESHQ-S\_IH-C-47
- 6.2.20 Industrial Hygiene Alarm Response TFC-ESHQ-S\_IH-C-45
- 6.2.21 TF Chemical Exposure Hazard Analysis (Safety & Health Programs-web page)
- 6.2.22 Exposure Monitoring, Reporting, and Records Management TFC-ESHQ-IH-STD-03
- 6.2.23 Industrial Hygiene Response to Vapor Concerns TFC-ESHQ-IH-STD-09
- 6.2.24 Industrial Hygiene Equipment Management TFC ESQC\_H- S PI 11
- 6.2.25 Industrial Hygiene Response to Employee Contact with Chemical Waste TFC-ESHQ-IH-STD-10
- 6.2.26 Industrial Hygiene Chemical Vapor Technical Basis RPP-22491, R1
- 6.2.27 Tank Waste Dermal Exposure Assessment RPP-34147, R O

6.2.28 Concentrations of Chemicals of Potential Concern in Water and Organic Condensates  
PRR-RPT-24794, R 1

6.2.29 Respirator Issuance and Control Processes TFC-ESHQ-S\_IH-CD-05.1

6.2.30 Personal Protective Equipment TFC-ESHQ-S\_IS-C-02

6.2.31 Blood borne Pathogen Exposure Control Standard TFC-ESHQ-S-24

6.2.32 INDUSTRIAL HYGIENE INSTRUMENT ALARM RESPONSE TFC-ESHQ-S\_IH-C-45, Revision A-1

6.2.33 Response to Reported Odors or unexpected Changes to Vapor Conditions, TF Abnormal Operating Procedures:

6.2.34 Evaluation and Procurement of Industrial Hygiene Monitoring Instruments TFC-ESHQ-S\_IH-CD-38

6.2.35 3M Breathe Easy Powered Air Purifying Respirator Test and Maintenance TFC-ESHQ-S\_IH-D-05.2

6.2.36 MSA OptimAir 6A Powered Air Purifying Respirator Test and Maintenance TFC-ESHQ-S\_IH-D-05.3

6.2.37 Using the TVA 1000B Toxic Vapor Analyzer TFC-ESHQ-S\_IH-D-25

6.2.38 Tank Vapor Source Monitoring TFC-ESHQ-S\_IH-D-27

6.2.39 Permit Required Confined Space TFC-ESHQ-S\_IH-C-04, Revision C-2

6.2.40 MIRAN 205B Series SapphIRe Instrument Operation TFC-ESHQ-S\_IH-D-32

6.2.41 Noise Surveys, Dosimetry, and Octave Band Analysis TFC-ESHQ-S\_IH-D-34

6.2.42 Hazard Communication TFC-ESHQ-S\_IH-C-02

6.2.43 COC and Submitting Samples for Laboratory Analysis TFC-ESHQ-S\_IH-P-10

6.2.44 Ergonomics TFC-ESHQ-S\_IH-STD-03

6.2.45 Cold Stress TFC-ESHQ-IH-STD-01

6.2.46 Heat Stress Control TFC-ESHQ S IH C -07

6.2.47 Laser Safety and Nonionizing Radiation TFC-ESHQ-IH-STD-02

6.2.48 Asbestos Control - Facility Management/General Industry TFC-ESHQ-IH-STD-04

- 6.2.49 Hearing Conservation Program TFC-ESHQ-IH-STD-06
- 6.2.50 Lead Control Program TFC-ESHQ-IH-STD-08
- 6.2.51 Carcinogen Control TFC-ESHQ-IH-STD-11
- 6.2.52 Industrial Hygiene Monitoring and Control Strategies During Tank Retrieval and Transfers TFC-ESHQ-IH-STD-12
- 6.2.53 Illumination TFC-ESHQ-IH-STD-13
- 6.2.54 IHT Flammable Gas Surveillance on Double Shell Tanks TF-OPS-IHT-00
- 6.2.55 Perform IHT Flammable Gas Surveillance on Single Shell Tanks TF-OPS-IHT-002
- 6.2.56 Preparation and Field Use of Multi-Gas Monitor Model TMX412 TF-OPS-IHT-003
- 6.2.57 Preparation and Field Use of iTX Multi-Gas Monitor and iSP Motorized Sampling Pump TF-OPS-IHT-004
- 6.2.58 Preparation and Field Use of the ppbRAE Volatile Organic Compound Monitor TF-OPS-IHT-005
- 6.2.59 Preparation and Field Use of Drager Accuro and Accuro 2000 Pump and Colorimetric Indicator TF-OPS-IHT-006
- 6.2.60 Using DRIs TF-OPS-IHT-007
- 6.2.61 Using The Sper Scientific Light Meter TF-OPS-IHT-008
- 6.2.62 IH Pump Preparation and field Use for Personal-Area Air Monitoring TF-OPS-IHT-009
- 6.2.63 Field Wipe Sampling and Bulk Sampling Methods TF-OPS-IHT-0010
- 6.2.64 Preparation and Field Use of the AreaRAE Multi-Gas Monitor TF-OPS-IHT-0011
- 6.2.65 Preparation and Field Use of the QUESTemp 15 and QUESTemp 32 Heat Stress Monitors TF-OPS-IHT-0012
- 6.2.66 Preparation and Field Use of the Lumex Ra-915+ Mercury Vapor Analyzer TF-OPS-IHT-0014
- 6.2.67 Preparation and Field Use of the Quest Q300 Noise Dosimeter and 2900 Sound Level Meter TF-OPS-IHT-0015
- 6.2.68 Preparation and Field Use of the Manning EC-P2 Ammonia Monitor TF-OPS-IHT-0016
- 6.2.69 Performance Indicators (H&S Web)

6.2.70 IH Exposure Assessment strategy TFC PLN-34, Revision D-2, Section 3.4

6.2.71 WRPS Health and Safety Tool Box Web Page: multiple fact sheets, data sheets, information sheets, analysis and reports.

**APPENDIX A – PRINCIPAL DOCUMENT REVIEW AND COMMENTS**

Document Name	Document Identifier	Comments
<b>PRIMARY DOCUMENTS</b>		
Integrated Environment, Safety, and Health Management System Description for the Tank Operations Contractor	RPP-MP-03	Baseline ISM
Worker Health and Safety Requirements Implementation Matrix	TFC-ESHQ-S_SAF-CD-11	-Excellent tool.
Worker Health and Safety Program	TFC-PLN-47 RPP-27195	-Does not address New Technology Program -Organizational Roles and Responsibilities element is difficult to access -Medical Surveillance Program is vague
Industrial Hygiene Safety Management Program Plan	TFC-PLN-55	-Calls for a target of 3 IH field inspections per week -No new technology review process -No element of metrics or corrective action elements
Chemical Hygiene Plan		To be addressed as part of the ATL assessment
Tank Operations Contractor Health and Safety Plan	TFC-PLN-43, REV A-12	-Scope is to be "compliant with 29 CFR 1910.120" -Scope includes (...)"facility workers protected from unplanned releases of radioactive and hazardous materials" -Unsuccessful in accessing WRPS Org Chart via cited web link -Does not address New Technology Program -Document contains cited links and over 200 secondary links contained in those documents - 4.2.1 No discussion of administrative controls - 4.6 BBP program is non compliant (see that line item) - 6.0 Contamination Control is radiation oriented no direction on chemical decontamination? - Medical surveillance does not address IH interactions with Medical contractor following uncontrolled exposures (EJTA is primary tool for ongoing surveillance).
IH Exposure Assessment Strategy	RPP-27195 TFC-PLN-34 R D-2	Lacks specific methodologies and decision making for use of DRIs, despite general directives provided.
Beryllium	TFC-PLN-24	Previously approved.
ASBESTOS PROGRAM	RPP-MP-625, REV	Effective.
Risk Management Plan	TFC-PLN-39, REV C December 3, 2008	-No discussion of Engineering control assessments, administrative control efficiency, PPE usage impacts, review of new technologies or future assessment strategies.
Emergency Management Program Plan	TF-PLN-85	Does not address all 29 CFR 1910.120 line items
Staff Qualifications		
Tank Farm Contractor Training and Qualification Plan	TFC-PLN-64	Applicable to all TOC personnel, General in nature
Technical Staff Qualifications Requirements	USQ-GCX-2	IH quals well addressed.
IH Tech Training and Qual Requirements	TFC-BSM-TQ STD-07 R C	-Calls for 2 yr degree + 1 yr experience & Basic in-house IH course, -Does not discuss IH Lead Quals -Does not address IH Equipment Custodian Quals
Subcontractor Oversight	ESH&Q/TFC-ESHQ-S_SAF-C-07, REV B-5	It is unclear as to who will provide the IH support. There are no minimal quals stated for H&S subs
EMPLOYEE JOB TASK ANALYSIS	TFC-ESHQ-S_IH-C-17, REV B-3	This is the key link in the Medical Surveillance Program within the TOC HASP. Does not address overexposure medical surveillance issues.
IH Deports and Documents	Safety & Health	Excellent resource

- Dermal Exposure Study - Waste Disturbing Activities Vapor Characterization.	Programs-web page	- Dermal Exposure Study - Dedicated to demonstrating that Silver shield CPC is not warranted for listed TF work. -Waste Disturbing Activities Vapor Characterization Report
IH Reporting & Records Management	TFC-ESHQ-S_IH-C-46	Overall, good document
Managing Vapor Control Zones	TFC-ESHQ-S_IH-C-48	Appears to be a very good tool, ties to the TVIS and the CHAD s.
Chemical Management Process	TFC-ESHQ-S_IH-C-47	- Not Hazwaste related
Industrial Hygiene Alarm Response	TFC-ESHQ-S_IH-C-45	IHT or IH: "Evaluate the cause and determine the need for additional actions" – no decision tree or directives for stop work, etc.
TF Chemical Exposure Hazard Analysis	Safety & Health Programs-web page	-Overall, very good risk characterization summaries in similar format for multiple tanks and operations. Use of comparable operations is useful.  *T Farm breather filter change out: No need for a vapor control zone and monitoring is limited to ammonia and VOCs. However, WRPS has 1) Provided a list of chemicals in condensate (Hg, nitrosamines, etc) & 2) Stated that filters trap semi vols ?
Exposure Monitoring, Reporting, and Records Management	TFC-ESHQ-IH-STD-03	Exceeds OSIA retention of exposure records (75 yrs)
Industrial Hygiene Response to Vapor Concerns	TFC-ESHQ-III-STD-09	Very good overall approach, but cited instruments and techniques are limited in scope?
Industrial Hygiene Equipment Management	TFC ESQC_H-S PI 11	Good Directive.
Industrial Hygiene Response to Employee Contact with Chemical Waste	TFC-ESHQ-IH-STD-10	"All hazard and facility/area information will be provided to the Occupational Medicine Contractor and the shift manager". What, where, How and when?
Technical Documents		
Industrial Hygiene Chemical Vapor Technical Basis	RPP-22491, RI	-Excellent effort, subject to some change per WRPS and HC interactions
Tank Waste Dermal Exposure Assessment	RPP-34147 Revision 0	- Excellent Element of Tech Basis- Advance level work -liquid has a pH of 13, yet document only calls for safety glasses, as does the PPE plan below. -Conclusion is unclear with respect to CPC requirements.
Concentrations of Chemicals of Potential Concern in Water and Organic Condensates	PRR-RPT-24794, R 1	-Excellent Study and characterization
Respirator Issuance and Control Processes	TFC-ESHQ-S_IH-CD-05.1	Effective.
Personal Protective Equipment	TFC-ESHQ-S_IS-C-02	-lacks discussion of decision logic for CPC selection & service life -Indicates that corrosive materials are cause for protection, but the text only addresses impact protection, not splash protection?
Blood borne Pathogen Exposure Control Standard	TFC-ESHQ-S-24	- does not define type of Gloves -Refers only to "masks" as respiratory protective equipment
INDUSTRIAL HYGIENE INSTRUMENT ALARM RESPONSE	TFC-ESHQ-S_IH-C-45, REV A-1	IHT or IH: "Evaluate the cause and determine the need for additional actions".
Response to Reported Odors or unexpected Changes to Vapor Conditions	TF Abnormal Operating Procedures:	IH to collect grab sample for GC/MS  Real time monitoring is VOC and ammonia
Evaluation and Procurement of Industrial Hygiene Monitoring Instruments	TFC-ESHQ-S_IH-CD-38	- No discussion of new technology reviews, but very good element of such a process.
3M Breathe Easy Powered Air	TFC-ESHQ-S_IH-D-	Effective.

<b>Purifying Respirator Test and Maintenance</b>	05.2	
MSA OptimAir 6A Powered Air Purifying Respirator Test and Maintenance	TFC-ESHQ-S_IH-D-05.3	Effective.
Using the TVA 1000B Toxic Vapor Analyzer	TFC-ESHQ-S_IH-D-25	-No discussion of COPC that are detected by PID/FID or sensitivity/correction factors
Tank Vapor Source Monitoring	TFC-ESHQ-S_IH-D-27	Very general, no techniques described.
Permit Required Confined Space	TFC-ESHQ-S_IH-C-04, REV C-2	No comments.
MIRAN 205B Series SapphiRe Instrument Operation	TFC-ESHQ-S_IH-D-32	Very good. Note format varies with different instruments.
Noise Surveys, Dosimetry, and Octave Band Analysis	TFC-ESHQ-S_IH-D-34	Excellent.
Hazard Communication	TFC-ESHQ-S_IH-C-02	Unclear as to what hazard index is used for labeling; HMIS?
Chain of Custody and Submitting Samples for Laboratory Analysis	TFC-ESHQ-S_IH-P-10	Good.
Ergonomics	TFC-ESHQ-S_IH-STD-03	Sound. Cites TLV Booklet for primary direction. See Also: TANK FARMS GENERAL INDUSTRIAL SAFETY HAZARDS ANALYSIS See Also Ergonomics H&S web page
Cold Stress	TFC-ESHQ-IH-STD-01	Effective.
<b>Heat Stress Control</b>	<b>TFC-ESHQ-S_IH_C-07</b>	Good, comprehensive.
Laser Safety and Nonionizing Radiation	TFC-ESHQ-IH-STD-02	No comment.
Asbestos Control - Facility Management/General Industry	TFC-ESHQ-IH-STD-04	29 CFR 1910.1001(l), <i>Medical Surveillance</i> requires a specific pre-placement examination before an employee can be designated as an asbestos worker but TFC-ESHQ-IH-STD-04, <i>Asbestos Control -- Facility Management/General Industry</i> does not document how these pre-placement requirements are transmitted to the occupational medical office or verified to have been met before placement.
Asbestos Control - Construction Industry	TFC-ESHQ-IH-STD-05	No comments
Hearing Conservation Program	TFC-ESHQ-IH-STD-06	29 CFR 1910.95(g)(10) defines a standard threshold shift as a change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more at 2000, 3000, and 4000 Hz or greater in either ear. Contrary to this TFC-ESHQ-IH-STD-06, <i>Hearing Conservation Program</i> , Revision A, Dated October 28, 2004 list the determining standard threshold shift that is an average of 25 dB or greater at 2000, 3000, and 4000 Hz in either or both ears for written notification to an employee.
Lead Control Program	TFC-ESHQ-IH-STD-08	29 CFR 1910.1025(e)(4), <i>Mechanical Ventilation</i> requires effectiveness check of at least every three months and within five days of any change that may result in a change in employee exposure to lead. Contrary to this TFC-ESHQ-IH-STD-08, <i>Lead Control Program</i> (section 3.3.3, <i>Mechanical Ventilation</i> ) omits the effectiveness check requirement.
Carcinogen Control	TFC-ESHQ-IH-STD-11	29 CFR 1910.1003 (c)(2)(ii) requires for the listed carcinogens within a regulated area, authorized employees upon exit wash the hands, forearms, face, and neck upon each exit. Contrary to this TFC-ESHQ-IH-STD-11, <i>Carcinogen Control</i> (Step 10) only identifies the action of washing but is non-specific on body section or upon each exit of the regulated area.  29 CFR 1910.1003(e)(1)(ii) requires a specific sign at entrances to regulated areas containing operations covered by paragraph (c)(5). Contrary to this TFC-ESHQ-IH-STD-11, <i>Carcinogen Control</i> (Step 8) does provide the specific signage as the referenced section requires.
Industrial Hygiene Monitoring and Control Strategies During Tank Retrieval and Transfers	TFC-ESHQ-IH-STD-12	Requires updating: This February, 2005 document discusses pending, future policies not yet addressed.
Illumination	TFC-ESHQ-IH-STD-13	-consistent with 29 CFR 1910.120 M (illumination)
IHT Flammable Gas Surveillance on	TF-QPS-IHT-001	-Good record keeping tools, no mention of calibration or correction factors if warranted.

<b>Double Shell Tanks</b>		
<b>Perform IHT Flammable Gas Surveillance on Single Shell Tanks</b>	TF-OPS-IHT-002	-Good record keeping tools, no mention of calibration or correction factors if warranted.
<b>Preparation and Field Use of Multi-Gas Monitor Model TMX412</b>	TF-OPS-IHT-003	Excellent. Note: No discussion of LEL corrections.
<b>Preparation and Field Use of iTX Multi-Gas Monitor and iSP Motorized Sampling Pump</b>	TF-OPS-IHT-004	Effective.
<b>Preparation and Field Use of the ppbRAE Volatile Organic Compound Monitor</b>	TF-OPS-IHT-005	Very Good (=- 10% of bump gas acceptable) No discussion of PID lamp or range, sensitivities or applications.
<b>Preparation and Field Use of Drager Accuro and Accuro 2000 Pump and Colorimetric Indicator</b>	TF-OPS-IHT-006	Excellent. Do not understand pump application in text?
<b>Using Direct Reading Instruments</b>	TF-OPS-IHT-007	-Overall, good document. - No discussion of COPC that are detected by PID/FID or sensitivity/correction factors
<b>Using The Sper Scientific Light Meter</b>	TF-OPS-IHT-008	Good.
<b>Industrial Hygiene Pump Preparation and field Use for Personal-Area Air Monitoring</b>	TF-OPS-IHT-009	Effective.
<b>Field Wipe Sampling and Bulk Sampling Methods</b>	TF-OPS-IHT-0010	Effective.
<b>Preparation and Field Use of the AreaRAE Multi-Gas Monitor</b>	TF-OPS-IHT-0011	Effective. Good detail.
<b>Preparation and Field Use of the QUESTemp 15 and QUESTemp 32 Heat Stress Monitors</b>	TF-OPS-IHT-0012	Effective.
<b>Preparation and Field Use of the Lumex Ra-915+ Mercury Vapor Analyzer</b>	TF-OPS-IHT-0014	Effective. Mode of technology absent.
<b>Preparation and Field Use of the Quest Q300 Noise Dosimeter and 2900 Sound Level Meter</b>	TF-OPS-IHT-0015	This procedure states the "the following documents may be need to perform this procedure" then lists 16 major documents, including TLV books, CFRs, ANSI docs, etc . This is an unrealistic burden to place on IHTs!
<b>Preparation and Field Use of the Manning EC-P2 Ammonia Monitor</b>	TF-OPS-IHT-0016	Unclear as to how an IHT's calibration (if necessary) is accounted for on sticker and records?
<b>Metrics</b>		
<b>Performance Indicators</b>	II&S Web	Good metrics, but limited to subject matter - Lab turn around data - Tracking of # of samples
<b>Industrial hygiene Exposure Assessment Strategy</b>	TFC-PLN-34, REV D-2 Section 3.4	-Discusses SEGs -number of exposures below 10% of OELs -Number of exposures greater than 50% of the OEL -Recommendations for SEG revisions or EAS improvements
<b>Tertiary Documents</b>		

<b>Procedural Items</b>	<u>LCO 3.2.3 SST 241-B-203/B-204 Passive Ventilation Sys</u>  <b>Tank Farm DSA Requirements Implementation Matrix</b>  <b>AC 5.8 Emergency Preparedness</b>  <b>AC 5.10 Flammable Gas Control</b>  <b>LCOS: ventilation, Flammable Gas Concentrations</b>	No Comments
<b>MSDS</b>	<b>Safety &amp; Health Programs-web page</b>	Appears to be a sound system of electronic MSDS access.
<b>TANK VAPOR INFORMATION SHEETS</b>	<b>Safety &amp; Health Programs-web page</b>	<ul style="list-style-type: none"> <li>- <u>Dermal Protection</u> outlines those tanks that do not call for silver shield. This does not clarify what CPC, if any, is warranted, nor does it address corrosive element.</li> <li>- <u>Monitoring for COPC's (Chemicals of Potential Concern)</u> Good element to the Exposure Assessment Strategy, as applied to A tank farm only. However, narrative states: " Direct reading instruments (DRI) are used to monitor for COPC that may cause immediate acute effects, such as irritation." However, the list of 8 chemicals that are monitored by DRIs does not include some other COPCs that appear to offer acute effects such as furan?</li> <li>- <u>Health Effects of Chemicals of Potential Concern</u> – good Hazard Communication tool for hazwaste constituents.</li> <li>- <u>Odor Thresholds</u> – good reference.</li> </ul>



**U.S. Department of Energy**

~~OFFICE OF RIVER PROTECTION~~

P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

JAN 12 2009

Appendix B  
09-ESQ-076

08-ESQ-335

Mr. Mike Armstead  
Procurement Contracts Manager  
Washington River Protection Solutions LLC  
2440 Stevens Center Place  
Richland, Washington 99354

Dear Mr. Armstead:

**CONTRACT NO. DE-AC27-08RV14800 – NOTIFICATION OF INDUSTRIAL HYGIENE  
TECHNICAL BASIS ASSESSMENT**

The U.S. Department of Energy, Office of River Protection (ORP) will conduct an assessment of the Washington River Protection Solutions LLC industrial hygiene technical basis during the month of January 2009. The lead for this assessment is Richard L. Uri and supported by Mario R. Moreno. An assessment review plan is attached.

If you have any questions, please contact me, or your staff may contact Richard L. Uri, Office of Environmental Safety and Quality, (509) 376-2229.

Sincerely,

Joseph C. Poniatowski  
Contracting Officer

ESQ:RLU

Attachment

cc w/attach:  
F. Beranek, WRPS  
M. W. Jones, WRPS  
D. T. Tuckness, WRPS  
WRPS Correspondence

Miller Decl., Ex. 11, p. 672  
PL-HC\_00000762

PL-HC\_00000762

Attachment  
08-ESQ-335

JAN 12 2009

**U.S. Department of Energy**

**Office of River Protection**

**Industrial Hygiene Technical Basis Assessment**

**of**

**Washington River Protection Solutions**

**Industrial Hygiene Technical Basis Assessment  
A-09-ESQ-TANKFARM -001**

**PURPOSE:**

U.S. Department of Energy (DOE), Office of River Protection (ORP) will conduct an assessment of the contractor's Industrial Hygiene (IH) technical basis programmatic documents, staff qualifications, and internal means of management, which provide guidance of work implementation at the Washington River Protection Solutions LLC (WRPS) operated facilities. This assessment fulfills a scheduled assessment that is identified in the ORP Fiscal Year 2009 Integrated Assessment Schedule. The assessment will conform to the requirements of ORP procedure ESQ-IP-1, RO.

**INDUSTRIAL HYGIENE SCOPE:**

The scope of this assessment shall be limited to the following basic tasks:

- I. A review and assessment of all WRPS programmatic IH related documents, as defined in this section;
- II. An evaluation of the IH personnel qualifications by way of a review of staff qualifications cards and through small group interviews; and
- III. A review of WRPS IH management records, data bases and reports that reflect the current level of effort associated with IH trends analysis, program metrics, program planning, self-assessments, and associated corrective actions.

The assessment plan was developed using DOE G 440.1-3, titled Occupational Exposure Assessment. DOE G 440.1-3 provided the Criteria, Review, and Approach Documents (CRAD)/Lines of Inquiry which are listed below. The assessor modified the CRADs/Lines of Inquiry to be more specific as it relates to WRPS. The assessor will use a combination of conventional review techniques during the course of the assessment, including document reviews, personnel interviews, and field observations.

For the purpose of this assessment and to assure a common understanding, an IH program is considered to consist of the following technical and programmatic sub-elements:

1. Hazard communication & related training;
2. Chemical exposure monitoring, modeling, and related health risk assessments;
  - a. Inclusive of air & surface sources, instrumentation, and techniques in consideration of eye/dermal exposures, injection, inhalation and ingestion

3. Toxicology and chemical hazard assessments;
  - a. Inclusive of medical surveillance, and consideration of health effects such as cancer, birth defects, chemical sensitivity, target organ effects; explosive, & reactive chemical hazards
4. Implementation and testing of control strategies for IH Hazards;
  - a. Inclusive of demonstrated consideration of engineering controls, including ventilation and shielding; administrative controls including product or process substitution; ongoing reviews of emerging technologies
5. Ergonomics and illumination;
6. Identification, assessment, and control of physical work environment factors;
  - a. Inclusive of heat and cold, high and low pressure environments, and shift work
7. Selection and use of Personal Protective Equipment, with an emphasis on eye, face, skin, and respiratory protection;
8. Energy and electromagnetic radiation;
  - a. Inclusive of the Identification, assessment and control of noise, non-ionizing radiation, and laser safety
9. Biological hazards assessment within the work place;
  - a. Inclusive of pathogenic agents, poisonous organisms, and allergens
10. Functional IH Management elements, including:
  - a. Staff Training and Qualifications programs
  - b. Trends analysis, Metrics, tracking, self-assessments and reporting
  - c. Lessons learned, corrective actions and improvements
  - d. Employee interactions and informational exchange
  - e. Planning, budgeting, and continuing education
11. Integration of the afore mentioned IH elements into applied operations including:
  - a. Hazardous Waste Operations
  - b. Confined Space Entry
  - c. Laboratory Chemical Hygiene Plans
  - d. Chemical spill response activities
  - e. Beryllium, lead, carcinogen and asbestos management programs

## **CRITERIA**

The CRAD is intended to provide guidance for evaluation of the occupational exposure assessment and health hazards management component of the DOE and WRPS IH program. The goal of the criteria is to answer the fundamental question:

"Is WRPS properly planning, and effectively managing an industrial hygiene, occupational exposure assessment, and hazards management program that meets the intent of 10 CFR 851?"

Enclosure 1 provides detailed questions that may be utilized as specific CRADs. Enclosure 2 provides a summary of the methodology to be employed, to assist WRPS in facilitation of the assessment process.

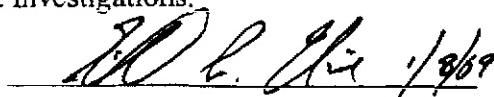
**TEAM MEMBERS:**

The assessment team will be lead by Richard L. Urie, with the support of Mario R. Moreno.

**REQUIREMENTS:**

- 10 Code of Federal Regulations (CFR) Part 851, Worker Safety and Health Program Rule;
- 10 CFR Part 850 Chronic Beryllium Disease Prevention Program; Final Rule (not applicable to this assessment);
- DOE G 440.1-3, Occupational Exposure Assessment;
- DOE O 226.1a, Contractor Assurance;
- OSHA Regulations Standards - 29 CFR 1910 and 1960;
  - 29 CFR 1910, with emphasis on –
    - General Duty Clause
    - 29 CFR 1910.120 Hazardous Waste Operations
    - 29 CFR 1910.132, Personal Protective Equipment
    - 29 CFR 1910.134, Respiratory Protection
    - 29 CFR 1910.94, 95 & 97 Ventilation, noise, & Non ionizing Radiation
    - 29 CFR 146 Confined Space Entry
    - 29 CFR 1910.141 Sanitation
- DOE Environmental Safety and Health (ES&H) Reporting Order 231.1; and Computerized Accident/Incident Reporting System;
- DOE O 231.1A, ES&H Reporting;
- Work Authorization System Order; DOE O 412.1A;
- ES&H Goals Policy; DOE P 450.7
- Safety Management Functions, Responsibilities, and Authorities Policy; DOE P 411.1
- Quality Assurance Order; DOE O 414.1C;

- DOE Notice 450.14, Safe Handling, Transfer, and Receipt of Biological Etiologic Agents at Department of Energy Facilities;
- DOE P 456.1, Secretarial Policy Statement on Nanoscale Safety;
- DOE Order 5480.19, Conduct of Operations Requirements for DOE Facilities;
- DOE Order 5480.20A, Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities; and
- DOE O 225.1A, Accident Investigations.



**Richard L. Urie, Team Lead, January 7, 2009**

**ENCLOSURE 1**

**PERFORMANCE OBJECTIVES**

**Performance Objective 1: Washington River Protection Solutions LLC (WRPS) Program Documentation**

Criteria to be evaluated:

1. Has the WRPS Safety and Health Organization documented the Industrial Hygiene (IH); occupational exposure and health hazards management programs in a manner which is comprehensive and compliant with 10 Code of Federal Regulations (CFR) 1910.851, 10 CFR 850 and 851, other U.S. Department of Energy (DOE) Directives and recognized consensus standards (e.g., the American Industrial Hygiene Association [AIHA], National Institute of Occupational Safety and Health [NIOSH]). Has the WRPS IH program defined the technical areas and the frequency at which each technical area is assessed? For each technical area, are there procedures for performing the health hazard assessment which defines the purpose, scope, responsibilities, assessment criteria, and references? Does the assessment documentation include: occupational exposure assessment and sampling methodology, laboratory analysis method used, report findings, causal analyses, corrective actions, review, and distribution of report?
2. Has WRPS documented a clear definition of responsibility for decisions by senior management, provision for escalation of worker health matters involving significant occupational exposures and hazards to DOE in an appropriate time frame?
3. Does WRPS maintain a documented sitewide planning and budgeting process which includes priorities for managing occupational exposures and health hazards?
4. Does the WRPS Safety and Health Organization have documented implementation plans for the occupational exposure and health hazards management program?
5. Has WRPS established clear lines of authority and responsibility for managing the occupational exposure and health hazards program? Are responsibilities of each staff position defined for worker health activities? Internal and external interfaces within and between the DOE Office of River Protection, the WRPS, and with outside groups (i.e., State, local, and regional health officials and other government agencies), being clearly and formally defined for each position?
6. Has the WRPS Safety and Health Organization developed and maintained a written occupational exposure and health hazards management program in conformance to 10 CFR 850, and 10 CFR 851.

## PERFORMANCE OBJECTIVES

### **Performance Objective 2: Operating Contractor's Program Implementation of Administrative Elements**

Criteria to be evaluated:

1. Has WRPS fully integrated its IH; occupational exposure and health hazards management program into the work planning and execution process?
2. Does the contractor's Safety and Health organization prepare an annual assessment schedule showing the occupational exposure and health hazards assessments planned?
3. Does the contractor's Safety and Health organization submit to the DOE Office of River Protection (ORP), a list of the dates on which occupational exposure and health hazards technical assessments were preformed?
4. Do the WRPS audit management system tools include; procedures for performing occupational exposure and health hazards assessments, worksheets, periodic standard report formats, reference material, training material, which are provided to staff performing assessments?
5. Does the contractor's Safety and Health Organization has a system in place to control, maintain occupational exposures, health hazards management procedures and hazard control guides current? Does the system include a mechanism for updating and distributing proccdurcs, and internal guides on a specified schedule?
6. Does WRPS Safety and Health Organization perform analyses on significant occupational exposures and health hazards assessment findings? Has the contractor identified staff that is responsible for correcting the contractor's health hazard deficiencies? Are the actions necessary to resolve the deficiency addressed in corrective action plans?
7. Does the contactor's Safety and Health organization perform trend analysis of findings from the occupational exposures and health hazards programs? Does the contractor communicate leading and lagging performance trends to ORP? Does the contractor have a technically defensible corrective action management program that will prevent reoccurrence of IH; occupational exposure and health hazards management program deficiencies?
8. Does the contractor's Safety and Health organization have a tracking system that includes all occupational exposures and health hazards finding? Does the tracking system identify corrective actions, schedules, and progress made on corrective actions? Is other information such as results of root cause analyses also included in the tracking system? Is there a method to flag or highlight significant events or actions is included in the tracking system?

9. Does the contractor's Safety and Health organization ensure that management processes, activity hazards identification and analysis, and functional technical appraisals in specific occupational exposure and health hazards assessment subject areas are included in the contractor's program and are integrated into the Contractor's safety management, work planning and execution system?

Note: This might include: activity hazards analysis, exposure assessments, hazard controls and, the specific technical program elements (e.g., noise and hearing conservation, ventilation, respiratory protection, asbestos, non-ionizing radiation (radio-frequency radiation, lasers, magnetic fields), ergonomics, carcinogens, DOE Beryllium program, Occupational Safety and Health Administration (OSHA) substance specific health standards i.e., Benzene, Asbestos, etc; occupant emergency and critical event planning, sanitation, vibration, extreme temperature, biohazards, confined spaces, laboratory hygiene program, Indoor Air Quality, office environments, recordkeeping, employee training and certification, and labeling and posting).

10. Does the contractor's line management organization track the effectiveness of its implementation of the occupational exposure and health hazards program by reviewing the findings of its internal assessments of the program? Does the contractor's line management identify problems which are promptly corrected?
11. Does WRPS have an effective corrective action program and organizational structure for resolving related action items? Contractor performance with respect to completing corrective actions is documented, reported, and tracked?
12. Does the WRPS Safety and Health organization have adequate staff with a level of professional training, experience commensurate with the requirements for implementation of the IH; occupational exposures and health hazards management program?
13. Does the WRPS Safety and Health organization ensure that internal self-assessments of occupational exposure and health hazards are conducted?
14. WRPS Safety and Health Organization ensure compliance with mandatory standards for assessing and managing occupational exposures and health hazards.
15. Is the WRPS occupational exposure and health hazards assessment staff adequately trained in occupational exposure assessment, such as through an AIHA, or other academic based program? Does the training address familiarization with all mandatory standards, AIHA or NIOSH criteria, guidance documents, and other references that are pertinent to the technical area; use of procedures for conducting the assessment and, instructions on preparing reports and related documentation?
16. Does the WRPS Safety and Health Organization prepare performance indicator reports, utilize performance indicators involving occupational exposures, health hazards data, and other operations information? This includes; medical monitoring, epidemiological surveillances, Computerized Accident/Incident Reporting System, OSHA 300 log data,

Occurrence Reporting and Processing System reportable occurrences, for performing trending and analysis to provide early identification of potential exposure and health hazards and/or deteriorating/improving worker health conditions.

17. WRPS provides management periodic summaries of performance on the assessment and management of occupational exposures and health hazards.
18. Has WRPS developed program management goals related to occupational exposures and health hazard? Are these goals measurable and include short-term (annual) and long-term goals (several year period) to assess and manage occupational exposures and health hazards? Is the progress towards goals monitored regularly and goals adjusted as necessary? Do the line managers have performance elements in their personnel appraisal relating to successful attainment of program management goals?

ENCLOSURE 2

**METHODOLOGY**

The Industrial Hygiene (IH) technical basis assessment shall consist of the following elements:

1. An in-brief tentatively planned for the week of January 12, 2009, involving the Washington River Protection Solutions LLC (WRPS) health and Safety Manager and IH Manger; and the U.S. Department of Energy (DOE) assessment team. The purpose of the in-brief is to clarify the scope and the applicable Criteria Review and Approach Documents; and to discuss scheduling and logistical requirements of the assessment.
2. The DOE Office of River Protection (ORP) assessment team shall review all WRPS IH related programs, plans, procedures and related documents currently on record. This assessment will not necessarily include a detailed review of data bases, log books, and records, other than to verify the presence of such documents as warranted. The review process will entail a comparative analysis of WRPS programmatic documents to Federal requirements (please see requirements section below) and include a review such umbrellas programs as:
  - 851 requirements Matrix TFC-ESHQ-S SAF-CD-11;
  - Worker Health and Safety Program, RPP-27195; and
  - Tank Operations Contractor Health and Safety Plan.

**To include secondary and tertiary documents such as**

- IH Chemical Vapor Technical Basis, RPP-22491, Revision 1;
  - IH Exposure Assessment Strategy RPP-27195 TFC-PLN-34 R D-2; and
  - IHT-007 Using Direct Reading Instruments.
3. The DOE ORP assessment team will meet with the appropriate WRPS management representatives to gain a clear understanding of WRPS IH program goals, objectives, metrics/trends analysis, and internal assessment efforts and results. In addition, the team will review the communication process between the WRPS IH management team and the DOE ORP representatives with respect to on-going programmatic updates and special event notifications. The meeting(s) will also serve as an opportunity to clarify any questions regarding WRPS written programs and guidance documents.
  4. The DOE ORP assessment team will coordinate with WRPS a series of interviews with equal grades of all WRPS IH personnel for the purpose of evaluating their level of knowledge and

training; and to gain first hand insight into their respective job duties and interactions relative to the programmatic directives.

5. The DOE ORP assessment team will conduct a Generator Assistance Program analysis based on the results of the assessment per a 10 CFR 851 itemized template.
6. Other elements as deemed necessary.
7. The DOE ORP assessment team will conduct a de-brief to discuss any draft observations or findings with WRPS managers of interest.

**Task# ORP-ESQ-2008-0344**

E-STARS® Report  
Task Detail Report  
01/12/2009 1013

**TASK INFORMATION**

<b>Task#</b>	ORP-ESQ-2008-0344		
<b>Subject</b>	CONCUR:08-ESQ-335; NOTIFICATION OF INDUSTRIAL HYGIENE TECHNICAL BASIS ASSESSMENT		
<b>Parent Task#</b>		<b>Status</b>	CLOSED 01/12/2009
<b>Reference</b>	08-ESQ-335	<b>Due</b>	
<b>Originator</b>	Gano, Becky	<b>Priority</b>	High
<b>Originator Phone</b>	(509) 376-6004	<b>Category</b>	None
<b>Origination Date</b>	12/30/2008 0835	<b>Generic1</b>	
<b>Remote Task#</b>		<b>Generic2</b>	
<b>Deliverable</b>	None	<b>Generic3</b>	
<b>Class</b>	Long Term	<b>View Permissions</b>	Normal
<b>Instructions</b>	<p>Correspondence is being routed for concurrence via hard copy. Once you receive the correspondence, please approve or disapprove electronically via E-STARS and route to next person on the routing/concurrence list.</p> <p>BCC:          ESQ OFF FILE          ESQ RDG FILE          J.C.PONIATOWSKI, AMD          W.J.TAYLOR, ESQ          K.A.HOAR, VCD          R.L.URIE, VCD</p> <p>RECORD NOTE:</p>		

**ROUTING LISTS**

1	Route List	Inactive
<ul style="list-style-type: none"> <li>● Urie, Richard L - Review - Cancelled - 01/12/2009 1013 <i>Instructions:</i></li> <li>● Hoar, Kenneth A - Review - Concur - 01/12/2009 1003 <i>Instructions:</i></li> <li>● Taylor, William J - Review - Concur - 01/12/2009 0734 <i>Instructions:</i></li> <li>● Poniatowski, Joseph C - Approve - Approved - 01/12/2009 0936 <i>Instructions:</i></li> </ul>		

**ATTACHMENTS**

- Attachments
1. 08-ESQ-335 att IH Technical Basis Assessment.doc
  2. 08-ESQ-335 WRPS LTR Notification of Industrial Hygiene Technical Basis Assessment.doc

**COLLABORATION****COMMENTS**

- Poster Gano, Becky - 01/12/2009 1001
- CLOSED

**RECEIVED**  
JAN 12 2009

Miller Decl., Ex. 11, p. 684  
PL-HC\_00000774

PL-HC\_00000774

**Task# ORP-ESQ-2008-0344**

E-STARS® Report  
Task Detail Report  
12/30/2008 0839

**TASK INFORMATION**

<b>Task#</b>	ORP-ESQ-2008-0344	<b>Status</b>	Open
<b>Subject</b>	<b>CONCUR:08-ESQ-335; NOTIFICATION OF INDUSTRIAL HYGIENE TECHNICAL BASIS ASSESSMENT</b>		
<b>Parent Task#</b>		<b>Due</b>	
<b>Reference</b>	08-ESQ-335	<b>Priority</b>	High
<b>Originator</b>	Gano, Becky	<b>Category</b>	None
<b>Originator Phone</b>	(509) 376-6004	<b>Generic1</b>	
<b>Origination Date</b>	12/30/2008 0835	<b>Generic2</b>	
<b>Remote Task#</b>		<b>Generic3</b>	
<b>Deliverable</b>	None	<b>View Permissions</b>	Normal
<b>Class</b>	Long Term		
<b>Instructions</b>	Correspondence is being routed for concurrence via hard copy. Once you receive the correspondence, please approve or disapprove electronically via E-STARS and route to next person on the routing/concurrence list.		
	<p>BCC:          ESQ OFF FILE          ESQ RDG FILE          J.C.PONIATOWSKI, AMD          W.J.TAYLOR, ESQ          K.A.HOAR, VCD          R.L.URIE, VCD</p> <p>RECORD NOTE:</p>		

**ROUTING LISTS**

1	Route List	Active
<ul style="list-style-type: none"> <li>• Urie, Richard L - Review - Awaiting Response - Due Date <i>Instructions:</i></li> <li>• Hoar, Kenneth A - Review - Awaiting Response - Due Date <i>Instructions:</i></li> <li>• Taylor, William J - Review - Awaiting Response - Due Date <i>Instructions:</i></li> <li>• Poniatowski, Joseph C - Approve - Awaiting Response - Due Date <i>Instructions:</i></li> </ul> <p><i>1/8/09 R.L. K.H. 1/8/09 NOT 1/9/09 1/12/09</i></p>		

**ATTACHMENTS**

- Attachments
1. 08-ESQ-335 att IH Technical Basis Assessment.doc
  2. 08-ESQ-335 WRPS LTR Notification of Industrial Hygiene Technical Basis Assessment.doc

**COLLABORATION****COMMENTS**

No Comments

**TASK DUE DATE HISTORY**

No Due Date History

**SUB TASK HISTORY**

No Subtasks

-- end of report --

## APPENDIX C - INTERGRATED SAFETY MANAGEMENT SYSTEM EVALUATION FORM

**ISMS Evaluation**  
**ESQ-OA-IP-01-R1**  
**Issued 01/21/09**  
**Tank Operations Contractor**  
**Industrial Hygiene Technical Basis Assessment**

**For each of the following identify whether the report:**

**S = Identified a strength**

**N = Found the topic with no special strength or weakness**

**W = Identified a weakness**

**N/A = Did not address the topic**

Topical Area	Evaluation	Comment (optional)
Core Function 1: Define the Scope of Work	W	Field work OK, weak at program level
Core Function 2: Analysis of Hazards	N	
Core Function 3: Develop and Implement Hazard Controls	N	
Core Function 4: Perform Work Within Controls	N	
Core Function 5: Provide Feedback and Continuous Improvement	W	
Principle 1: Line Management Responsibility for Safety	W	
Principle 2: Clear Roles and Responsibilities	W	Including weak interfaces with Ops and Eng.
Principle 3: Competence Commensurate with Responsibilities	N	
Principle 4: Balanced Priorities	W	
Principle 5: Identification of Safety Standards and Requirements	W	
Principle 6: Hazard Controls Tailored to Work Performed	W	
Principle 7: Operations Authorization	N	
Supplemental Principle 1: Highly-Reliable Operational Performance	W	
Supplemental Principle 2: Individual Attitude and Responsibility	S	Current workforce usually performs work correctly in absence of program Procedures.
Supplemental Principle 3: Performance Assurance	W	
Supplemental Principle 4: Organizational Performance Improvement	W	

**APPENDIX D – ASSESSMENT TEAM BIOGRAPHIES****Richard L. Uriel, Team Lead**

Mr. Uriel is certified in Industrial Hygiene (IH) by the American Board of Industrial Hygiene, # 3681; and is co-certified in safety, but the Board of Safety Professionals, #12248. He holds a masters degree in Environmental Science from the University of Colorado - Denver and a Bachelor of Science Degree in Community Health, from the University of Northern Colorado. He has practiced IH and safety since 1980, with project experience at over 20 major Comprehensive Environmental Response Compensation and Liability Act Sites and 4 U.S. Department of Energy (DOE) facilities within the western United States. He initiated and managed an IH consulting firm from 1988 to 1999, employing 5 Certified Industrial Hygienists and has provided assessments, training, and consultation to over 400 institutions and businesses in the United States, Germany, Kuwait, Iraq, Indonesia, Taiwan, and Australia. He has served as the team lead for the Department of Homeland Security - Biological Emergency Support Team as a member of the HAZMAT Team at the Los Alamos National Laboratory (LANL) and worked directly with the Centers for Disease Control Infectious Disease Branch and the National Institute for Occupational Safety and Health in the response to a suspected bioterrorism event and in the establishment of response planning for perceived targets of opportunity in New York City, New York. He supported research in airborne agricultural bioterrorism through LANL and Texas A&M West. Examples of past IH assessments performed by Rich Uriel include:

- PNL - Hanford Pre Tiger Team IH programmatic assessment & HAZWOPER training.
- LANL Readiness Assessment of the TA-54 Decontamination, Volume Reduction System & training.
- Rocky Flats Plant post Tiger Team IH HAZWOPER programmatic assessment and generation of the original HAZWOPER Health and Safety Program.
- U.S. Army Support Operations Iraq/Kuwait: IH risk assessments & training.
- Freeport Indonesia annual IH programmatic Assessments and staff training program.
- Adolph Coors Company IH Emergency Preparedness Assessment and Training.
- Homestake Gold Mine IH Programmatic Assessment.
- National Aeronautics and Space Administration (NASA) White Sands Test Facility IH field Assessments.
- AMOCO Production emergency response assessor, expert witness, and trainer.

He is the author of three publications on the subject of Personal Protective Equipment and associated risk assessments. One such publication was in collaboration with the American Conference of Governmental Industrial Hygienists. He has served as an expert witness in Federal court regarding related IH subject matter, and provided IH presentations to the U.S. Attorney General's Office, Department of Homeland Security, NASA, National Mining Engineers Conference, and DOE, among others. Mr. Uriel is currently the IH program representative for the DOE Office of River Protection.

**Mario Moreno, Team Member**

Mr. Moreno holds a bachelor's degree from California State Polytechnic University in Chemical Engineering. He has provided engineering related services to the U.S. Department of Energy (DOE) for 20 years, including an assignment as the program manager for the Single-Shell Tank stabilization efforts. Mario, formerly with the tank farm nuclear safety/authorization basis; is currently working towards Industrial Hygiene (IH) certification under the DOE Office of River Protection IH mentorship program and has completed a number of IH technical courses. He has participated in numerous health and safety related assessments at the Hanford Site.

**Task# ORP-ESQ-2009-0083**

E-STARS<sup>R</sup> Report  
 Task Detail Report  
 04/16/2009 0804

**TASK INFORMATION**

<b>Task#</b>	ORP-ESQ-2009-0083		
<b>Subject</b>	CONCUR:09-ESQ-076; RESULTS OF ASSESSMENT A-09-ESQ-TANKFARM-001, PHASE I, "INDUSTRIAL HYGIENE TECHNICAL BASIS"		
<b>Parent Task#</b>	<b>Status</b>	CLOSED 04/16/2009	
<b>Reference</b>	09-ESQ-076	<b>Due</b>	
<b>Originator</b>	Gano, Becky	<b>Priority</b>	High
<b>Originator Phone</b>	(509) 376-6004	<b>Category</b>	None
<b>Origination Date</b>	03/02/2009 0920	<b>Generic1</b>	
<b>Remote Task#</b>		<b>Generic2</b>	
<b>Deliverable</b>	None	<b>Generic3</b>	
<b>Class</b>	Long Term	<b>View Permissions</b>	Normal
<b>Instructions</b>	Correspondence is being routed for concurrence via hard copy. Once you receive the correspondence, please approve or disapprove electronically via E-STARS and route to next person on the routing/concurrence list.		

BCC:  
 ESQ OFF FILE  
 ESQ RDG FILE  
 MGR RDG FILE  
 J.C.PONIATOWSKI, AMD  
 W.J.TAYLOR, ESQ  
 K.A.HOAR, VCD  
 M.R.MORENO, VCD  
 R.L.URIE, VCD  
 B.J.HARP, TF

**RECORD NOTE:****ROUTING LISTS**

1	Route List	Inactive
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- Urie, Richard L - Review - Cancelled - 04/16/2009 0804  
*Instructions:*
- Moreno, Mario R - Review - Cancelled - 04/16/2009 0804  
*Instructions:*
- Hoar, Kenneth A - Review - Concur - 03/02/2009 0949  
*Instructions:*
- Taylor, William J - Review - Concur with comments - 03/16/2009 0802  
*Instructions:*
- Harp, Ben J - Review - Cancelled - 04/16/2009 0804  
*Instructions:*
- Charboneau, Stacy L - Review - Concur - 03/18/2009 1335  
*Instructions:*
- Poniatowski, Joseph C - Approve - Approved - 04/15/2009 1624  
*Instructions:*

**RECEIVED**

APR 16 2009

**DOE-ORP/ORPCC****ATTACHMENTS**Miller Decl., Ex. 11, p. 689  
 PL-HC\_00000779

PL-HC\_00000779

## **Task# ORP-ESQ-2009-0083**

- Attachments**
- 1. 09-ESQ-076 Appendix A Principal Document Review and Comments.doc
  - 2. 09-ESQ-076 Appendix B.pdf
  - 3. 09-ESQ-076 Appendix C ISMS Evaluation Form.doc
  - 4. 09-ESQ-076 Appendix D Assessment Team Biographies.doc
  - 5. 09-ESQ-076 att Report IH Tech Basis Review.doc
  - 6. 09-ESQ-076 WRPS LTR Results of Assessment A-09-ESQ-TANKFARM-001 Phase I.doc

### **COMMENTS**

- Poster** Taylor, William J (Gano, Becky) - 03/16/2009 0802  
Concur  
Pat Carier for Bill Taylor on 3/13/09.
- Poster** Gano, Becky - 04/16/2009 0804  
CLOSED  
Rich Urie concurred on 3/3/09; Mario Moreno concurred on 3/4/09; and Ben Harp concurred on 3/16/09.

### **TASK DUE DATE HISTORY**

*No Due Date History*

### **SUB TASK HISTORY**

*No Subtasks*

-- end of report --

**Task# ORP-ESQ-2009-0083**

E-STARS<sup>R</sup> Report  
Task Detail Report  
03/02/2009 0925

**TASK INFORMATION**

<b>Task#</b>	ORP-ESQ-2009-0083	<b>Status</b>	Open
<b>Subject</b>	CONCUR:09-ESQ-076; RESULTS OF ASSESSMENT A-09-ESQ-TANKFARM-001, PHASE I, "INDUSTRIAL HYGIENE TECHNICAL BASIS"	<b>Due</b>	
<b>Parent Task#</b>		<b>Priority</b>	High
<b>Reference</b>	09-ESQ-076	<b>Category</b>	None
<b>Originator</b>	Gano, Becky	<b>Generic1</b>	
<b>Originator Phone</b>	(509) 376-6004	<b>Generic2</b>	
<b>Origination Date</b>	03/02/2009 0920	<b>Generic3</b>	
<b>Remote Task#</b>		<b>View Permissions</b>	Normal
<b>Deliverable</b>	None		
<b>Class</b>	Long Term		
<b>Instructions</b>	Correspondence is being routed for concurrence via hard copy. Once you receive the correspondence, please approve or disapprove electronically via E-STARS and route to next person on the routing/concurrence list.  BCC: ESQ OFF FILE ESQ RDG FILE MGR RDG FILE J.C.PONIATOWSKI, AMD W.J.TAYLOR, ESQ K.A.HOAR, VCD M.R.MORENO, VCD R.L.URIE, VCD B.J.HARP, TF		
	RECORD NOTE:		

**ROUTING LISTS**

1	Route List	Active
<ul style="list-style-type: none"> <li>• Urie, Richard L - Review - Awaiting Response - Due Date <i>P.R.U. 3/3/09 3/11/09</i> <i>Instructions:</i></li> <li>• Moreno, Mario R - Review - Awaiting Response - Due Date <i>MWM 3/4/09</i> <i>Instructions:</i></li> <li>• Hoar, Kenneth A - Review - Awaiting Response - Due Date <i>K.H. 3/12/09</i> <i>Instructions:</i></li> <li>• Taylor, William J - Review - Awaiting Response - Due Date <i>WT 3/3/09</i> <i>Instructions:</i></li> <li>• Harp, Ben J - Review - Awaiting Response - Due Date <i>B.H. 3/16/09</i> <i>Instructions:</i></li> <li>• Charboneau, Stacy L - Review - Awaiting Response - Due Date <i>SC 3/18/09</i> <i>Instructions:</i></li> <li>• Poniatowski, Joseph C - Approve - Awaiting Response - Due Date <i>J.P. 4/15/09</i> <i>Instructions:</i></li> </ul> <p><i>3/2/09</i> <i>OLINGER, SHIRLEY - REVIEW</i></p>		
<b>ATTACHMENTS</b> <i>Kefkin</i> Attachments <ul style="list-style-type: none"> <li>1. 09-ESQ-076 att Report IH Tech Basis Review.doc</li> <li>2. 09-ESQ-076 encls 1 Principal Document Review and Comments.doc</li> <li>3. 09-ESQ-076 encls 2.pdf</li> </ul>		